

ATTACHMENT 2: PUBLIC COMMENTS CONCERNING PROPOSED CLEANUP AND ABATEMENT ORDER NO. R3-2007-0077

COMMENTS

(Note: Water Board staff received numerous comments on Draft Cleanup and Abatement Order R3-2007-0077. Copies of all comment letters received can be accessed via our website: <ftp://swrcb2a.swrcb.ca.gov/pub/rwqcb3/Olin%20Perchlorate/December%207%202007%20Board%20Meeting/> (paper copies will be provided upon request). In the following section, Water Board staff includes an abridged version of significant comments in italics and our response is provided following each comment, as follows:

Santa Clara Valley Water District (comments are in italics for all interested parties)

- 1. Water Board Use of Olin's Priority Zone A Designation (24.5 ppb) Is Inappropriate -***
The Water Board should not use Olin's 24½ ppb designation of Priority Zone A to establish where active remediation is required. The 24½ ppb level coincides with US EPA's Preliminary Remediation Goal (PRG) that was established as guidance for hazardous waste sites and is not intended for application to impacted drinking water supplies. EPA's memo notes that the PRG should be modified based on "actual and potential exposure routes"; implying that a lower level would be set where the goal is restoration of impacted drinking water. The Water Board's adoption of Olin's proposed Priority Zone A designation in the Draft CAO leaves a large area of perchlorate-impacted drinking water supply aquifer with no active remedy. The Draft CAO orders Olin to cleanup to background; however, Olin is not required to actively remediate groundwater except where perchlorate levels are four times higher than the Maximum Contaminant Level (MCL). Allowing large portions of the Llagas groundwater subbasin to remain impacted by perchlorate at concentrations higher than background will reduce water supply reliability and impose unreasonable constraints on groundwater basin operations. Consequently, the District will not be able to meet the water supply reliability demands for the community depending on the Llagas groundwater subbasin. The District believes that the Water Board should consider all alternatives to restore water supply reliability to the Llagas groundwater subbasin by requiring active remediation in a wider area than currently defined by Olin's arbitrary designation of Priority Zone A. As detailed in the District's comments on Olin's Llagas Subbasin Cleanup Feasibility Workplan, Monitored Attenuation is not an appropriate remedy for remediating a sole-source drinking water aquifer impacted with perchlorate at levels that exceed the newly adopted MCL.

STAFF RESPONSE:

Considering the lateral and vertical extent of the perchlorate groundwater plume emanating from the Olin Site (9.5 miles long and greater than 500 feet deep), Olin evaluated the distribution of perchlorate in groundwater with respect to four geographical areas (Assessment Areas I, II, III, and IV). These assessment areas correlate with current and historical perchlorate concentrations, number of occurrences, and frequency of detections south of the Site. Additionally, as part of Olin's evaluation of remediation alternatives, Olin also divided the perchlorate plume into priority zones (Priority Zones A, B, and C). Olin selected the numerical values to define Priority Zones A, B, and C in order to divide the perchlorate plume into more manageable areas. The assigned numerical values have no impact on the cleanup goal that the remedial alternatives are intended to meet.

The approved cleanup strategy consists of a phased cleanup approach for perchlorate-impacted groundwater within the Llagas Subbasin. Implementation of the phased approach includes hydraulic containment and treatment of groundwater (i.e., pump and treat) in the area of highest concentrations (plume core) in combination with monitored attenuation (MA) for those areas with lower perchlorate concentrations. Specifically, Olin is required to install dedicated groundwater extraction wells within the plume core (i.e., Priority Zone A) that exists within the intermediate and deep aquifer zones to achieve effective hydraulic control of perchlorate-impacted groundwater to downgradient areas, and achieve compliance with groundwater cleanup requirements. Olin will monitor and evaluate the results in those areas with lower perchlorate concentrations to determine the effectiveness of the hydraulic control measures and MA. Based on the results from perchlorate concentrations downgradient of the on-site groundwater extraction system, Water Board staff anticipates that similar decreasing trends will be observed downgradient of Priority Zone A after hydraulic containment begins. Water Board staff will evaluate the effectiveness of hydraulic containment and require additional active remediation in areas outside of the hydraulic containment zone if perchlorate concentrations don't decrease at a reasonable rate.

Water Board staff understands the Water District's concern about allowing large portions of the Llagas groundwater Subbasin to remain impacted by perchlorate at concentrations higher than background. However, the use of a concentration of 24.5 µg/L to describe certain areas is much less significant than the fact that all wells (with two exceptions noted below) with concentrations higher than 8.0 µg/L have well head treatment. As all remaining wells with perchlorate greater than the drinking water standard are within about 2 µg/L of the MCL, we expect that attenuation to less than the MCL will be achievable relatively soon. We will monitor perchlorate concentrations outside of Priority Zone A. If they don't show attenuation at rates we deem appropriate, we will require Olin to implement their contingency plan.

- 2. **Schedule and Scope** - The District's objective for the Water Board's CAO is to obtain a comprehensive, time-certain cleanup plan. Water Board staff has explained that the intent of the Draft CAO is to bring together the Water Board's numerous directives to Olin Corporation for monitoring, characterization, cleanup, and alternative water supply into single regulatory order. Unfortunately, the Draft CAO still falls short of accomplishing clarity of schedule and scope. There has been a general pattern of Olin submittals and Water Board partial approvals that have left stakeholders and the public unclear on what has been approved and what point has been reached in the regulatory process. By submitting incomplete or inadequate workplans, feasibility studies, and other required documents, Olin has delayed compliance by forcing an iteration of document rejection or partial rejection, followed by piecemeal compliance of the rejected portions of the ordered actions. Revised compliance schedules and deadlines have been issued by the Water Board in several Water Board letters to Olin. The Draft CAO should clearly list all outstanding requirements and their deadlines in a manner that allows interested stakeholders to obtain a clear picture of schedule and scope. The timelines in the Draft CAO are not clearly stated, partly because submittals are often required some time after Water Board approval. Some sections of the Draft CAO are still left open-ended. For example, Ordering Section E requires that all additional investigation activities required in a list of five Water Board partial approval letters*

be completed, but no deadline is established in the Draft CAO. In Finding #19, the Draft CAO states that the Discharger is required to proceed with immediate implementation of groundwater cleanup, but in the Ordering Section, there is no requirement to start pumping and treating sooner than 2009. The District needs a clearly stated schedule; it is currently unclear what is due when in the Draft CAO. The District expects the Draft CAO to include clearly identifiable and measurable milestones that will produce meaningful, time-certain and comprehensive active cleanup.

STAFF RESPONSE:

The Olin cleanup case is a large scale and complex project, including multiple tasks running concurrently. Olin has submitted numerous reports and each one of these reports are reviewed by Water Board staff. Water Board staff has responded to, approved, or conditionally approved a majority of the reports submitted and has clearly stated cleanup schedules or conditions of approval in each letter. Water Board staff provides a copy of each Water Board response letter to all stakeholders including the Water District, therefore, the Water District has the available data to determine what the current cleanup schedule and conditions of cleanup are. If Water District staff is unclear regarding the status of task approval or the project schedule following receipt of any Water Board correspondence with Olin, please contact staff for clarification. Also, as I am sure you are aware, Water Board staff regularly provide schedule and program updates at the monthly Perchlorate Community Advisory Group meetings. Also, staff, including the Executive Officer, has attended the multi-agency (including the Water District) Perchlorate Working Group meetings whenever requested and has answered all questions. Water Board staff provides additional information about the current cleanup time schedule in our response to the Water District's comment No. 3. The CAO sets forth enforceable deadlines, which may be revised on occasion to respond to the iterative nature of the investigation and cleanup actions at the site. Staff has revised the Ordering portion of the proposed Order to further clarify the cleanup schedule.

- 3. **Interim Remediation Requirements Missing** - The District requests that the Water Board exercise its authority to require that Olin initiate interim remedial action in the very near future to control ongoing migration from areas with higher levels of perchlorate to unimpacted areas, so that more water systems and well owners do not become contaminated with perchlorate. The Draft Order includes a very long timeline for compliance with the most urgently needed action, the Area I Plume Migration Control System. The first meaningful action to remediate off-site impacts will not commence until an unspecified date after the Engineering Design package is due by November 2008. In all likelihood, this means that the long-awaited remediation will not actually start up until 2009. By Olin's estimates of groundwater velocity, the plume could migrate from 700 to 2,000 feet during that time. Remediation could proceed within a few months of the Water Board compelling Olin to implement interim remediation in Area I/Priority Zone A. Interim remediation can be accomplished without waiting for completion of all the access agreements, encroachment permits, and other requirements of a regional conveyance system. There is nothing to prevent Olin from pursuing a satellite remediation option on an interim basis where access agreements have already been established, while concurrently pursuing regional conveyance. Similarly, Olin could pursue multi-site pump and treat, where several remediation extraction wells are connected to a single treatment system without piping untreated water all the way back to the 425 Tennant Road site. Several means of*

implementing interim remediation are available to Olin; the District strongly encourages the Water Board to mandate immediate migration control.

STAFF RESPONSE:

Water Board staff concurs with the Water District that groundwater plume containment is a high priority and we do not want unreasonable delays in implementing the groundwater plume containment system. Water Board staff approved the cleanup schedule proposed in the Area I Plume Migration Control System Work Plan on March 29, 2007. The Water Board approved cleanup schedule from the Area I Plume Migration Control System Work Plan has the following key milestones:

- Intermediate Extraction Well Installation and Yield Testing: August 30, 2007.
- 100% Engineering Design Package: October 30, 2008.
- Hydraulic Containment Startup: July 1, 2009.

Olin's June 15, 2007, Cleanup Workplan includes the same dates for these key milestones above, with the exception of the Intermediate Extraction Well Installation and Yield Testing date, which Olin changed to (and we concurred) November 30, 2007, due to well extraction design issues related to the selected treated water disposition method.

On July 25, 2007, Olin presented preliminary data from the deep aquifer characterization activities at well locations MW-59 and MW-60 and the results indicate that Priority Zone A in the deep aquifer extends approximately two miles southeast of the Site. Priority Zone A in the deep aquifer is therefore significantly larger than predicted when the Area I Plume Migration Control Work Plan and the Area I Extraction Well Installation Work Plan that Olin submitted in December 2006 and April 2007, respectively.

Based on preliminary information collected from MW-59 and MW-60, Olin anticipates that the flow rates required to hydraulically contain Priority Zone A in the deep aquifer may be substantially greater than anticipated during preparation of the Area I Plume Migration Control Feasibility Study and the Area I Work Plan. Olin anticipates that the recent characterization results will adversely affect the implementation schedule associated with the Cleanup Work Plan. Based on the additional information, Olin must reevaluate several factors that may affect the final design of the treatment and conveyance systems, re-injection system, and treated water disposition methods. Some of the factors that require additional evaluation include:

- extraction rates (as determined by deep aquifer hydraulic testing),
- water quality of the extracted aquifer (e.g., nitrate concentrations),
- number and optimal location of deep aquifer extraction wells based on deep aquifer characterization data (anticipated completion date is November 30, 2007),
- treated water disposition option,
- extraction well design,
- water treatment option that incorporates containment of the expanded deep aquifer plume volume,

- capacity of onsite recharge,
- determine whether a combined groundwater containment system for the intermediate and deep aquifer zones versus implementing independent groundwater containment systems for the intermediate and deep aquifer zones,

On August 16, 2007, Olin submitted the Priority Zone A Status Update letter, which includes an updated cleanup time schedule for implementing hydraulic containment of Priority Zone A. The Priority Zone A Status Update letter indicates that the deep aquifer well installation and hydraulic testing will not be completed until March 30, 2008, which is in contrast to the November 30, 2007 schedule presented in the Cleanup Work Plan. Olin based the extended schedule for deep aquifer well installation on the need to continue the characterization activities within the deep aquifer zone, in order to optimize where Olin will place the extraction wells to hydraulically contain and cleanup Priority Zone A groundwater in the deep aquifer and to determine the final design of the overall treatment system. Please note the schedule has not changed for installation and yield testing of the intermediate extraction well by the end of this month.

Water Board staff believes it is reasonable and justified to allow Olin additional time to complete deep zone characterization activities and evaluate the overall design and implementation of the Priority Zone A hydraulic containment strategy. Therefore, the key milestones, as they are now stated in the CAO, are:

- Intermediate Extraction Well Installation and Yield Testing: November 30, 2007.
- Deep Well Installation and Yield Testing: March 28, 2008.
- 100% Engineering Design Package: February 13, 2009.
- Hydraulic Containment Startup: October 5, 2009.

Please note that the hydraulic containment startup date is three months later than the original approved cleanup time schedule presented in the Area I Plume Migration Control System Work Plan.

We concur with the Water District's concern about plume core migration between now and the time when Olin achieves hydraulic containment. Currently, Olin provides replacement water to all domestic well users with perchlorate concentrations above the maximum contaminant level (6 µg/L). Olin will continue to provide replacement water to water users relying on wells with perchlorate concentrations greater than 6.0 µg/L and will continue to monitor those wells that are no longer receiving bottled water, in accordance with State Water Board Order WQ 2005-0007 and our letter dated October 6, 2006, "SLIC: 425 Tennant Ave, Morgan Hill; Termination of Replacement Water and Post Monitoring Requirements." With the exception of two domestic supply wells with perchlorate concentrations of 19 µg/L and 9.6 µg/L, respectively, all domestic supply wells with perchlorate concentrations greater than 8.0 µg/L are fitted with ion exchange systems (the two exception wells are not currently being used so Olin has not provided well head treatment). Additionally, based on the available perchlorate concentration trend data, the downgradient edge of the plume core in the intermediate aquifer appears relatively stable.

4. **Ordered Requirements Should Not Depend on District's Perchlorate Background and Source Study** - *The Draft Order mentions the District's Perchlorate Background and Source Study (PBSS), which is not part of a regulatory program. The objective of the District's study is to use state-of-the-practice techniques to provide the District with determinations of the background concentration of perchlorate in the Llagas groundwater subbasin, and whether forensic environmental geochemistry techniques can reliably distinguish natural from man-made source(s) of perchlorate found in the Llagas groundwater subbasin. As the District's study is not required by any regulatory agency, it is inappropriate to build any dependency on the study outcome into the Draft CAO. The District therefore requests that reference to reliance upon the PBSS be removed from the Draft CAO. The Order notes in Finding #44 that as groundwater cleanup proceeds, Olin must reevaluate the feasibility of achieving the cleanup goal, assuming that background concentration will be established. The District suggests that the Water Board require that Olin establish a background level based on its own findings. While it is the District's hope that its study will provide useful information to all concerned, it should not be the basis for regulatory requirements.*

STAFF RESPONSE:

Water Board staff has been very clear in our correspondence with Olin that unless Olin provides evidence (data) that demonstrates that other sources of perchlorate are contributing to the groundwater plume, we must assume that Olin is the only source of the detected perchlorate concentrations downgradient and immediately north and northeast of the Olin Facility.

In regards to source identification in the area northeast to of the Olin Site, Water Board staff originally required investigation of the area northeast of the Olin site in a 13267 Order on December 8, 2004. The 13267 Order required Olin to evaluate perchlorate concentrations in wells northeast of the site and conduct a forensic investigation. Olin petitioned Water Board's adoption of the 13267 Order to the State Water Resources Control Board in a petition dated January 6, 2005. Dischargers and the Water Board stipulated a stay of the 13267 Order on February 10, 2005. Olin has satisfactorily complied with all of the conditions of the Stay. The only remaining task addressed by the Stay is completion of a forensic investigation. As explained in Item No. 4 of the Stay, *"The Santa Clara Valley Water District ("District") has indicated that it is willing to commence a forensics investigation to the northeast of the Site. The primary focus of the District's investigation will be outside of the area in which the area requires the Dischargers to conduct their forensics investigation (the "Forensics Area"). However, the District has indicated that it will also perform some of this investigation within the Forensics Area. The Parties believe that the District expects to complete its forensics investigation by summer 2005".*

Results of the Water District's Forensic study are still not available. Water Board staff once again encourages the Water District to complete the forensic investigation to avoid duplicate efforts at this stage. While we understand that the Water District's forensic investigation may not provide definitive results, we trust it will provide additional data that are likely to be relevant to any further proceedings related to the source of perchlorate northeast of the Site. In discussions with Mr. Tom Mohr of the Water District, we understand that preliminary results will be available for review in Spring

2008. Considering that the results of the forensic investigation will be available in a few months, Water Board staff believes it is not practical or reasonable to require Olin to conduct the forensic study at this time.

5. **Nitrate and Chlorate** - *The Draft CAO notes in Finding #3 that the Discharger stored and used strontium nitrate and chlorate at the facility. Both of these flare mix ingredients have significant potential to contaminate groundwater, yet they are mentioned nowhere else in the Draft CAO. The Draft CAO should include a clearly stated list of the Constituents of Concern for this case based on the materials used in manufacturing flares, and the Findings section of the Draft CAO should explain why some potential contaminants are excluded.*

STAFF RESPONSE:

The Olin flare source material contained 70 percent strontium nitrate and 10 percent potassium perchlorate. We understand that Olin also stored chlorate (swimming pool chemical) at their facility. Water Board staff concurs with the Water District that strontium nitrate and chlorate could potentially pollute groundwater. The Water District and Lawrence Livermore National Laboratories (LLNL) have investigated distribution of nitrate in the Llagas Subbasin. LLNL has shown that the lateral distribution of nitrate concentrations measured in samples collected from numerous wells across the Llagas Subbasin demonstrates a non-point source pattern. The history of agricultural practice within the Subbasin and LLNL's isotopic analysis of nitrate points to the use of nitrate-based agricultural fertilizers as the principal source of nitrate concentrations. Additionally, as detailed in a May 8, 2006 letter from Worley Parsons Komex, the dilution that reduces perchlorate concentrations from 10 percent to $\mu\text{g/L}$ levels in groundwater will also likely reduce nitrate concentrations to $\mu\text{g/L}$ concentrations in groundwater (due to the similar physiochemical properties of nitrate and perchlorate), which is over three orders of magnitude less than drinking water standards. Therefore, the nitrate concentrations that Olin may have contributed to groundwater are insignificant relative to the background concentrations of nitrate that are present in the Llagas Subbasin.

In December 2002, Olin sampled onsite wells for strontium. Strontium was not detected at concentrations of concern; therefore, no additional work to delineate strontium was required.

6. **Replace 'PHG' with 'MCL'** - *Throughout the Draft CAO, references to the Public Health Goal should be replaced with references to the recently adopted California Department of Public Health Maximum Contaminant Level (MCL).*

STAFF RESPONSE:

Comment noted. Water Board staff has made the changes in the CAO. Staff authored the Draft CAO prior to the promulgation of the new perchlorate MCL.

CITY OF GILROY

The City of Gilroy wishes to express our concerns with the Proposed Cleanup of Abatement Order No. R3-2007-0077 to Olin Corporation. While we appreciate the effort and time that has been required of the Board and staff to manage this contamination situation, we do not feel that

the Draft CAO adequately addresses the cleanup of the aquifer and fails to meet the needs and expectations of our regional community.

The City of Gilroy is in full support of the comments offered by the Perchlorate Working Group with regards to the CAO. However, we would like to emphasize our concerns with the lack of any requirement in the CAO for active remediation and cleanup of the aquifer outside of the core plume area. The City does not find monitored attenuation to be an acceptable course of action that will restore the water supply to background levels in an acceptable time frame. It is essential that Olin be required to begin basin wide active remediation now, and no longer defer constructive cleanup while additional data is gathered. While we recognize that future information might suggest slight modifications to clean up strategies, a substantial body of information and data is already available to support implementation of immediate clean up action.

The communities of south Santa Clara County have waited too many years for the clean up of the aquifer to begin, and is entitled to a comprehensive, time-certain, basin-wide cleanup plan that will restore beneficial use of the water supply with contamination remediated to background levels. We look to the Board for your help and we strongly urge the Board to uphold its duty to protect and restore South County's source of drinking water by compelling Olin to take accountability and implement active measures to immediately remediate the contamination.

STAFF RESPONSE:

Since 2003, when Olin first reported offsite perchlorate in groundwater, Olin has conducted numerous investigations to determine the extent of perchlorate in groundwater. Considering the lateral and vertical extent of the groundwater plume, cleanup of the groundwater to background concentrations is a very complex and expensive undertaking.

As you are aware, Olin proposes implementation of a phased groundwater cleanup approach that includes hydraulic containment and treatment of groundwater in the plume core coupled with MA in downgradient areas. The anticipated timeframe for perchlorate to reach 6.0 µg/L is 5 years for the Shallow Aquifer, 12 years for the Intermediate Aquifer, and 24 years for the Deep Aquifer. Most of the domestic wells are in the shallow aquifer. While five years is a long time to depend on bottled water, remember that nearly all wells in the worst areas, greater than 8.0 µg/L, are provided well head treatment. Lower concentration wells should reach the MCL much sooner than five years. Olin has not presented anticipated cleanup timeframes for the Shallow, Intermediate, and Deep Aquifers to background concentrations. Our approval of the MA remedy component is conditional because our evaluation of the long-term effectiveness of MA and verification of the predicted timeframes estimated for groundwater cleanup using the numerical flow and transport model and groundwater data are not available at this time. Due to our concerns regarding the effectiveness of the MA remedy component, Olin is required to implement the MA remedy component in strict accordance with USEPA's guidance document¹ concerning the use of MA at groundwater cleanup sites. As such, Olin is required to continuously evaluate and demonstrate that the selected cleanup approach (MA in conjunction with hydraulic

¹ United States Environmental Protection Agency, OSWER Directive Initiation Request, "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites," April 21, 1999.

control and treatment measures) will effectively achieve remediation objectives within a timeframe that is reasonable compared to that offered by other methods.

Water Board staff will review the Performance Monitoring Program results (quarterly and annual progress updates) to evaluate whether the MA remedy option is performing as expected and is capable of attaining the remediation objectives within the anticipated (reasonable) timeframes. A Remedial Contingency Plan is required that consists of an approach that will function as a backup remedy (i.e., install additional extraction wells) in the event that the MA component fails to perform as anticipated. Any remedy at the site must be consistent with the Central Coast Water Board Basin Plan and State Water Resources Control Board Resolution 92-49, i.e., the cleanup level is background unless a less stringent level is approved based on an evaluation of economic and technical feasibility. No cleanup level may be less stringent than the MCL.

OLIN CORPORATION

- 1. There is convincing and credible substantial evidence that perchlorate detected northeast of the Site originates from one or more sources not related to the Olin Site. Finding Paragraph 23(f) in the draft CAO is inconsistent with previous Water Board correspondence and unreasonable given that the most likely origin(s) of perchlorate in the northern portion of the Subbasin supported by the existing evidence do not include the Olin Site. The preponderance and weight of the evidence supports rescinding Olin's responsibility to further investigate perchlorate north and upgradient of the Site as stated in the CAO as well as to include a finding of non-responsibility.*

STAFF RESPONSE:

Based on the trace perchlorate concentration data provided by City of Morgan Hill from its municipal water supply wells and data collected by Olin from private domestic wells located up to three-miles north and northeast of the Olin site, Central Coast Water Board staff support Olin's contention that detectable perchlorate concentrations in groundwater in the northern portion of the Llagas Subbasin (north and northeast of the Olin site) may be attributable to other source(s). As you may recall, our May 9, 2007 correspondence specifically supports Olin's assertion.

While we agree with Olin's assertion that it is highly unlikely that the Olin Site is the source of perchlorate concentrations detected up to three miles north and northeast of the Olin site (immediately south of Anderson Reservoir), Olin is responsible for providing evidence (data) to support its contention that the perchlorate concentrations detected immediately northeast of the Facility are not attributed to the former Olin Facility. Absent other evidence to the contrary, Olin is responsible for all detections of perchlorate concentrations emanating from the Olin Site in all directions. Unless Olin presents evidence to the contrary, perchlorate concentrations detected in the deep aquifer zone, immediately east of the site and north of Tennant Avenue likely emanate from the Olin Site.

Further, based on the recent perchlorate concentrations detected at several deep-monitoring ports immediately northeast and east of the site including PZ-05-390, the lateral delineation in the Lower Deep Aquifer zone is incomplete. As a condition of our

approval to install piezometer PZ-05, we specifically indicated that based on the results of sampling from this well and deep aquifer zone wells located southeast of PZ-05, we would determine the need for additional delineation east and northeast of the PZ-05 well.

Further, Olin's groundwater cleanup strategy must include all portions of the Llagas Subbasin that are impacted by perchlorate from the Olin Site in all directions. Central Coast Water Board staff will evaluate Olin's MA performance monitoring program to ensure all areas immediately north and northeast of the Site that have been impacted by discharges of perchlorate from the Olin Site are attenuating at a reasonable rate.

Based on the groundwater data provided to date, the Olin Site is the likely source of perchlorate concentrations detected in the deep aquifer zone and immediately north and northeast of the Site. The extent of Olin's perchlorate north and northeast of the site has not been determined. Water Board staff is hopeful that the forensic geochemistry study will provide information identifying all sources of perchlorate. However, at this time, based on the available data, Water Board staff considers Olin's perchlorate to extend to the area bounded by wells MP/PZ-01 through MP/PZ-03. As discussed above, additional delineation of perchlorate in the deep aquifer is still required east of PZ-05.

We await the results of Olin's on-going characterization activities in the deep aquifer to better define the extent and degree of groundwater pollution that originated from the Olin Site. We also await the results from the Water District's forensic chemistry study and anticipate the District's study will indicate whether an anthropogenic source of perchlorate is contributing to the detected impacts.

- 2. MACTEC established that cleanup to background water quality is not economically and technically feasible. Therefore, the CAO must be revised to state that Olin will cleanup to an "interim" cleanup goal of 6.0 µg/L. Specifically, Olin states that its Revised Cleanup FS Report established that: (1) cleanup to background is not reasonable as it is economically and technically infeasible, (2) the appropriate cleanup level here is 6 µg/L, and (3) cleanup to a concentration consistent with the PHG (i.e., 6 µg/L) is (a) consistent with the maximum benefit to the people of the state, (b) does not unreasonably affect present and anticipated beneficial uses of the water, and (c) does not result in water quality less than that prescribed in the Basin Plan.*

As currently written, the CAO is inconsistent with previous Water Board correspondence; the interim cleanup goal is not referenced within any of the Finding or Ordering Paragraphs, despite the Water Board's March 29, 2007 response to the Revised Cleanup FS stating that "...Olin must at least achieve the maximum allowable cleanup level (6.0 µg/L), it is appropriate to use the maximum cleanup level as an interim groundwater cleanup goal". The CAO currently discusses the cleanup goal only in terms of an as-of-yet unknown 'background' concentration. For instance, although Finding Paragraph 18 (Cleanup Level) states that it is not reasonable at this time to establish a final cleanup level for the Subbasin, Ordering Paragraph H (Completion of Groundwater Cleanup) specifies (in contrast) that "cleanup will be considered complete when the Discharger achieves the background concentration..."

Furthermore, although the Water Board conditionally agreed with the proposed alternative cleanup goal of 6 µg/L, the CAO appears to use Resolution No. 92-49 as justification to cleanup to background (see Finding Paragraph 45). This is not consistent with the allowance to establish an alternative cleanup goal if cleanup to background water quality is not technically or economically feasible as established in the Revised Cleanup FS. This report presented the technical and economic infeasibility of establishing cleanup to a background level (then assumed to be 2 µg/L). Finding Paragraph 45 presents a contradiction by stating “the Water Board will require the Discharger to propose additional remedies until the Discharger achieves compliance with Resolution 92-49”. The Water Board does not acknowledge their previous acceptance of Olin’s alternative cleanup goal and/or the findings presented and supported in the Revised Cleanup FS.

Finally, Olin notes that, although the perchlorate MCL of 6 µg/L will be promulgated before the final CAO is issued, this regulatory value is neither anticipated nor referenced in the draft CAO.

Promulgation of this value should have significant bearing with respect to the alternative cleanup level, per Resolution 92-49, in terms of what constitutes ‘maximum benefit to the people’. This issue was addressed by MACTEC in the Revised Cleanup FS to establish safe drinking conditions in domestic and municipal water supplies and as an appropriate value to gauge groundwater remediation.

STAFF RESPONSE:

Central Coast Water Board has not accepted Olin’s alternative cleanup goal of 6.0 µg/L. As specified in our March 29, 2007 response to Olin’s December 6, 2006 *Llagas Subbasin Cleanup Feasibility Study – Revised, Olin/Standard Fusee Site, 425 Tennant Avenue, Morgan Hill, California,*

“...It is premature to set a final groundwater cleanup level for perchlorate in the Llagas Subbasin.” Therefore, the Central Coast Water Board will consider groundwater cleanup complete when Olin complies with the cleanup objective (goal) of achieving the background concentration² within each individual aquifer zone for those portions of the Llagas Subbasin impacted by discharges from the Olin site.”

Further, our March 29, 2007 response letter states,

“... Olin has not adequately substantiated its contention that cleanup of the Llagas Subbasin to a level below the established PHG of 6.0 µg/L is not achievable. As such, Olin must complete ongoing characterization activities and perform additional evaluations of the phased remediation approach (as it is implemented) south of the site to determine the feasibility of cleaning up the basin to background concentrations.”

Furthermore, our ‘Cleanup Level Determination’, letter states:

² If the implemented cleanup technology proves unsuccessful in achieving background in a technically and economically feasible manner, the Central Coast Water Board may adjust cleanup goals later.

“...The Revised Cleanup FS Report provides a more thorough evaluation, analysis and justification for proposing a Cleanup Level for perchlorate in groundwater. However, Olin’s proposed Cleanup Level for the Llagas Subbasin (6.0 µg/L) remains inconsistent with the State Water Board’s anti-degradation policy and Resolution No. 92-49. Olin’s approach and proposed cleanup level are also inconsistent with the Central Coast Water Board’s goals to protect groundwater as a resource and to restore degraded water quality. In accordance with Resolution No. 92-49 (Section III.G), cleanup shall be conducted in a manner that promotes attainment of background water quality. If background levels of water quality cannot be restored, water quality must be restored to the best water quality, which is reasonable, considering all demands being made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. While the Revised Cleanup FS Report substantiates Olin’s proposed Cleanup Level from a human health perspective, it does not provide conclusive substantiation that it is not feasible to achieve an alternative concentration below the PHG [public health goal].

As discussed in our March 29, 2007 comments concerning the original Cleanup FS Report, to comply with Resolution No. 92-49, the cleanup level of perchlorate-impacted groundwater in the Llagas Subbasin must be between the background concentration and the applicable water quality objective specified in the Central Coast Region Basin Plan. As you are aware, on October 18, 2007, the California Department of Public Health established a primary Maximum Contaminant Level (MCL) for perchlorate of 6.0 µg/L, which is the least stringent level necessary to protect the municipal and domestic supply (MUN) beneficial use, and is therefore currently considered the maximum allowable cleanup level. Even though the MCL for perchlorate is now established, until a background concentration for perchlorate is determined, we must assume that the background concentration could be as low as the method detection limit (MDL) for perchlorate (~2.0 µg/L). Therefore, in accordance with Resolution No. 92-49, the groundwater cleanup level for perchlorate is between 2.0 and 6.0 µg/L.

Central Coast Water Board staff continues to believe it is premature to be able to know with certainty whether it will be feasible to cleanup perchlorate impacted groundwater in a reasonable time within each individual aquifer zone to levels below the MCL. At this time, many uncertainties exist with respect to the effectiveness, expediency, and efficiency of the selected groundwater remedial strategy. Considering all of these unknowns and uncertainties, it is not prudent at this time to establish a cleanup level.

As additional data are collected and evaluated, including data associated with the Water District’s forensic chemistry study (for background determination purposes) and ongoing containment/treatment performance monitoring data, and as the parties thoroughly evaluate the efficacy of the selected remediation strategy, the appropriateness of establishing an alternative cleanup level greater than background will be reevaluated. Further discussions and evaluation of establishing an

appropriate cleanup level must take place concurrent with implementation of the phased groundwater remediation strategy proposed by Olin.”

Should Olin submit information that indicates background water quality cannot be reasonably restored, Central Coast Water Board staff will evaluate that information and ensure consistency with State Water Resources Control Board Resolution No. 92-49, Section III.F.1. The CAO has been revised to indicate that the final cleanup level must be consistent with Resolution 92-49 and may be less stringent than background.

Based on this comment, we find the term “interim cleanup goal” is misleading and confusing. Therefore, we have opted to remove that term from our proposed CAO and any future correspondences.

Water Board staff included a finding to the proposed CAO concerning the promulgation of a MCL of 6.0 µg/L for perchlorate.

- 3. **Compliance with Resolution No. 92-49** - With respect to actions for cleanup and abatement, Resolution No. 92-49 must conform to Resolution No. 68-16, among other provisions, “...to ensure that dischargers shall have the opportunity to select cost-effective methods for detecting discharges or threatened discharges and methods for cleaning up or abating the effects thereof”. Resolution No. 68-16 establishes the ‘non-degradation’ clause within the California Water Code (Division 7) relative to ‘high quality waters’ of the state, as defined by the Water Quality Control Plan for the Central Coastal Basin (Basin Plan).*

As currently written, the Water Board’s references in Finding Paragraphs 10, 11 and 12 to Resolution No. 68-16 are inconsistent with the Basin Plan and/or lack proper citation. For instance, Finding Paragraph 12 concludes that “the determination of whether water is a ‘high quality water’ is made on a constituent-by-constituent basis”. The Water Board’s reliance upon a constituent-by-constituent approach to groundwater quality in the Subbasin is used to support Finding Paragraph 10, where it is stated that “Although nitrate exceeds the MCL through much of the basin, the perchlorate plumes described in this Order degrade the high quality water of the state in violation of this [Resolution No. 68-16] objective”. Aside from the Water Board’s inconsistent application of water quality standards, this statement presents a significant contradiction in that it establishes an inconsistent definition of ‘high quality water’, particularly with respect to perchlorate. The Water Board effectively states that widespread nitrate concentrations that are in excess of both the Basin Plan water quality goals and the Maximum contaminant limit (MCL) value do not compromise their conclusion that Llagas Subbasin groundwater remains of ‘high quality’. Yet at the same time, and in significant contrast, low concentrations of perchlorate that are below the Public Health Goal (PHG) (and the MCL) do in fact compromise the ‘high quality’ definition of Subbasin groundwater.

In summary, the CAO as currently written by the Water Board is inconsistent with previous correspondence, omits the Water Board’s approved interim cleanup goal of 6 µg/L in lieu of cleanup to an as-yet-determined background concentration, and inconsistently cites Resolution No. 68-16 in contradiction to known groundwater quality issues.

STAFF RESPONSE:

We disagree with Olin’s contention that the proposed CAO, as currently written, is inconsistent with previous correspondence and that the Central Coast Water Board’s

application of water quality standards is inconsistent. The fact that portions of the Llagas Subbasin have been polluted by nitrates (i.e., nitrate exceeds the MCL through much of the basin), does not justify the discharge of other pollutants including perchlorate. The phrase "constituent by constituent basis" is used to clarify that irrespective of the existing quality (or state of degradation), no one is authorized to add to the pollution or degrade it any further. In this particular case, the term 'high quality' is defined as the quality of the Llagas Subbasin groundwater prior to the discharge of perchlorate. It is worth noting that whether or not the groundwater is of "high quality" with respect to Resolution 68-16 does not alter the substance of the CAO. Olin is required to cleanup the groundwater in compliance with Resolution 92-49, i.e., cleanup to background unless that is not feasible and if not cleanup to the lowest level that is feasible between background and the applicable numeric water quality objective (the MCL).

4. Reporting Schedule –

- a. *Specific to Ordering Paragraph D1, Olin has demonstrated that groundwater extraction is no longer necessary in the shallow aquifer and that plans for deep aquifer groundwater extraction are pending ongoing characterization activities. It is therefore unlikely that sufficient additional information (i.e., deep aquifer extraction well test results) will be available by April 15, 2008 and this element should be removed from the CAO.*

STAFF RESPONSE:

Considering the recent detections of perchlorate in the deep aquifer zone, we understand that Olin will require additional time to complete characterization and hydraulic evaluation activities within the deep aquifer zone. We also recognize that Olin requires additional time to evaluate whether it must modify the selected remedy, including the treated groundwater disposition option for onsite re-injection. Therefore, Central Coast Water Board staff is not requiring that deep aquifer extraction well test results will be included in the Area I FS Addendum. Instead, we expect Olin's FS Addendum (due April 15, 2008) will specifically address the scheduling, installation, and testing of the necessary deep aquifer zone groundwater extraction wells that are required to effectively contain and remediate the plume core in the deep aquifer zone. Further, the addendum will include the following: (i) resolution and selection of the final water treatment and disposition options, (ii) the conceptual design for the Assessment Area I system incorporating extraction rates based on well-yield testing of the extraction wells and any newly available results of ongoing characterization activities, (iii) an updated schedule for design and implementation of the Assessment Area I system, and (iv) all other pertinent information concerning the deep zone characterization activities, installation and proposed extraction well locations concerning the deep aquifer zone.

- b. *Specific to Ordering Paragraph D2, we request that this requirement be modified to include the submittal of a 45% design package (in addition to the 90% and 100% design packages stated). Dates should thus be modified to August 5, 2008, November 25, 2008, and February 17, 2009 for the 45%, 90%, and 100% Engineering Design Packages for the Area I Plume Migration Control System, respectively. Inclusion of deep*

aquifer groundwater extraction systems within these design packages will depend upon findings from ongoing characterization activities.

STAFF RESPONSE:

Staff agrees with this comment and has corrected Ordering Paragraph D2 as requested. The modified implementation dates are based on the approved implementation schedule, as addressed in upcoming response to Olin's *Llagas Subbasin Cleanup Work Plan*. Water Board staff will revise the submittal dates as follows:

- 45% Engineering Design Package due date: August 8, 2008
- 90% Engineering Design Package due date: November 28, 2008
- 100% Engineering Design Package due date: February 13, 2009

CITY OF MORGAN HILL

1. *The proposed CAO should include use of the Tennant Well to "cleanup perchlorate-impacted groundwater to achieve background concentrations" in the "Area 1." Proposed CAO, paragraphs A and D.)*

STAFF RESPONSE:

Staff disagrees with the City's recommendation and refers the City to our Central Coast Water Board's June 29, 2007 response to the City's May 22, 2007 letter concerning the same issue. As explained in our response, "...The Central Coast Regional Water Control Board cannot "specify the design, location, type of construction, or particular manner in which compliance may be had" with the CAO, and Olin may "comply with the order in any lawful manner." (Ca. Wat. Code Section 13260.) ...

If Olin chooses to propose the continued operation of the wellhead treatment system as part of its remediation strategy, Water Board staff will consider that proposal when reviewing the overall cleanup strategy. If Olin does not propose this option, staff will consider what additive benefits Tenant wellhead treatment could provide (e.g., faster cleanup, improved plume containment) when considering Olin's final well extraction locations for the groundwater cleanup remedy in Area I. If wellhead treatment at the Tennant Avenue Well is part of Olin's cleanup activities, Olin and the City will have to work out any issues related to Olin's access to the wellhead treatment system and/or arrange for payment of associated costs.

At this time, Water Board staff cannot determine whether operation of the Tennant Avenue Well provides hydrogeologic containment of the plume that Olin's proposed Area I extraction wells will or will not provide. Olin's position is that the Tennant Well will not provide additional containment of the plume that the proposed Area I extraction wells will not provide. Water Board staff will review field data from Olin's extraction and observation wells to confirm this. The City may have drawn perchlorate into the deeper aquifer(s) by running the Tennant Avenue Well; if so, continued operation of the well might help to contain the plume.

The City suggests that it must operate the Tennant Avenue Well to compensate for lost wells in other parts of the system. As you know, the Water Board cannot require Olin to provide replacement water for any wells with perchlorate concentrations at or below 6.0 µg/L, nor can the Water Board require Olin to replace the Tennant Avenue Well, because Olin has already done so by paying for the installation of the San Pedro well.

Our position concerning this matter remains the same as stated in our June 29, 2007 response letter. Water Board staff does not recommend changes to the proposed CAO or the issuance of a separate CAO regarding this matter.

- 2. The proposed CAO should require cleanup to the presumed background levels now. There is no justification to delay. Awaiting the completion of the Santa Clara Valley Water District's ("SCVWD's") forensic study ("Study") is inappropriate and leads to continued delays for no substantive reason.*

STAFF RESPONSE:

Staff concurs with the City that cleanup to background levels is high priority. Water Board staff refers the City to our specific response to Olin's comment No. 2, above. We believe our response clearly states that we will consider groundwater cleanup complete when Olin complies with the cleanup objective (goal) of achieving the background concentration³ within each individual aquifer zone for those portions of the Llagas Subbasin impacted by discharges from the Olin site. As groundwater cleanup proceeds, Olin may reevaluate the feasibility of achieving the cleanup goal (background concentration) or reevaluate the feasibility of achieving an alternative groundwater cleanup level (concentrations less stringent than background). Should Olin submit information that indicates background water quality cannot be reasonably restored, Water Board staff will evaluate that information and ensure consistency with State Water Resources Control Board Resolution No. 92-49, Section III.F.1.

With respect to the appropriateness of waiting for the completion of the Water District's forensic chemistry study, we refer the City to our September 25, 2006 correspondence concerning the rescission of a 13267 Order and our response to the Water District's comment #4 above. As you may recall, on September 25, 2006, Water Board rescinded (without prejudice) a Water Board December 8, 2004 13267 Order requiring Olin to install groundwater-monitoring piezometers and conduct perchlorate sampling of private wells and a forensic chemistry investigation in the "Northeast Study Area."⁴ "Without prejudice" means that the Water Board may issue new requirements to Olin requiring the same work described in the rescinded 13267 Order, or any related work or other investigation that may be necessary to complete the investigation and cleanup of the Site. The Water Board rescinded the 13267 Order (subject to a conditional stay since February 10, 2005) because Olin has satisfactorily complied with all of the conditions of the Stay, with the exception of the forensic chemistry investigation. The Water District has secured federal funding to undertake a basin-wide forensic chemistry

³ If the implemented cleanup technology proves unsuccessful in achieving background in a technically and economically feasible manner, the Central Coast Water Board may adjust cleanup goals later.

⁴ The "Northeast Study Area" is the area northeast of the Olin Site and bounded by Tennant, Murphy, Diana and Railroad Avenues.

investigation covering an area much larger than Olin had been directed to address and plans to complete the investigation by spring 2008. Notwithstanding the results of the Water District's forensic investigation, it remains Olin's responsibility to provide evidence (data) to characterize the full vertical and lateral extent of the waste plume emanating from the Site.

To date, Water Board has been awaiting completion of the Water District's forensic chemistry study. We anticipate the Water District's study will help determine, if and to what extent, suspected natural and anthropogenic sources of perchlorate are contributing to the existing perchlorate groundwater impacts. However, as stated above, notwithstanding the results of the Water District's forensic investigation, in accordance with State Board Resolution No. 92-49, the background concentration of perchlorate in groundwater within the Llagas Subbasin must be the level of perchlorate that would exist in groundwater without regard to any discharges from the Facility.⁵ Aside from the analytical data from wells located south of Anderson Reservoir, Olin has not demonstrated that there are other sources of the long-term perchlorate concentrations in the entire Llagas Subbasin or discrete areas within the Subbasin. Until the Discharger substantiates its assertion that a measurable background level of perchlorate exists within the entire Llagas Subbasin or discrete areas within the Subbasin, the Water Board will continue to find that the background perchlorate level in groundwater (for the majority of the Llagas Subbasin) is less than the MDL⁶.

3. *Finding No. 16 should be amended by deleting the first sentence referencing the SCVWD Forensic study.*

STAFF RESPONSE:

We disagree. The statement merely presents factual information as to which agency is conducting the forensic study. There is not a specific Water Board requirement for the Water District to conduct the forensic study.

4. *Finding No. 17 should be amended to require Olin to determine background concentrations of perchlorate "using available existing data." The clause could also require Olin to periodically update its characterization of background level as additional data becomes available. Moreover, this clause allows Olin to include any data that Olin "claims" is due to other sources, in the background characterization. The clause MUST be amended to delete the word "claims" and replace it with "can be demonstrated based on sound scientific evidence." "...that the perchlorate present is due to other sources". This should include, but not be limited to, perchlorate that is conclusively upgradient of the site, and should not include any locations downgradient or cross-gradient of the site, considering all groundwater flow directions in all aquifer zones intersected by the well being sampled.*

STAFF RESPONSE:

⁵ In the case of commingled plumes from multiple identifiable dischargers, background is determined without regard to the commingled discharges.

⁶ The MDL is instrument-specific and is defined as the lowest concentration that a given instrument can record. The MDL for perchlorate using United States Environmental Protection Agency (USEPA) Method 314.0 is typically 1.4 micrograms per liter (µg/L).

Staff could not locate the term “claims” in Finding No. 17. Nonetheless, staff has modified Finding No. 46 as follows:

“...the Discharger has not demonstrated, **based on sound scientific evidence**, that there are other sources of the long-term perchlorate concentrations for the majority of the Llagas Subbasin including the area immediately north and northeast of the Facility or other discrete areas within the Llagas Subbasin.”

5. *Finding No. 18 should be stricken and Finding No. 19 (and the related parts of the Order-in particular, paragraph 44) should be rewritten as follows:*

*“This Order requires the Discharger to implement active remediation within the **Llagas Subbasin Immediately**. ~~highest concentration areas expeditiously~~. The Discharger is required to proceed with immediate implementation of groundwater cleanup with the cleanup objective (goal) of achieving the background concentration⁷ within each individual aquifer zone and those portions of the Llagas Subbasin impacted by discharges from the Facility...”*

STAFF RESPONSE:

Staff believes the proposed Order includes this requirement. Staff has modified several section of the proposed Order to ensure cleanup requirements are clear and specific. However, we believe the statement in Finding No. 18 which states, “...As additional data are collected and evaluated, including data associated with the Water District’s forensic chemistry study (for background determination purposes) and ongoing performance monitoring data, and as the Central Coast Water Board thoroughly evaluates the efficacy of the selected remediation strategy, establishing an alternative cleanup level greater than background will be reevaluated.” remains factual and valid.

We agree, however, that we need to revise Finding No. 44 to ensure that the approved offsite groundwater cleanup strategy is adequately described and appropriately referenced. Due to the re-ordering, this change is reflected in Finding No. 48.

6. *The Proposed CAO ignores the Northeast Contamination Area and perpetuates Olin’s claim that investigation and remediation to background in that area is not a priority despite the fact that this area contains the sole source of water to the homes and businesses of 38,000 people.*

STAFF RESPONSE:

The proposed CAO does not ignore the Northeast Area. Please refer to our response to Olin Corporation’s comment No. 1, above. Also, see changes made to Proposed CAO, Findings Nos. 7, 8f, and 45-48. Also, as reflected in these findings and previous Water Board correspondence addressing this matter:

⁷ If the implemented cleanup technology proves unsuccessful in achieving background in a technically and economically feasible manner, the Central Coast Water Board may adjust cleanup goals later.

It remains Olin's responsibility to provide evidence (data) to support its contention that the perchlorate concentrations detected northeast of the Facility are not attributed to the former Olin Facility. The available evidence (as defined in Water Code section 13267(e)) is adequate to require Olin to continue to investigate the northeast area as a discharger or suspected discharger. Should the Water District's investigation be delayed or discontinued, the Central Coast Water Board will require Olin to complete a forensic investigation [northeast of the Facility]. Furthermore, although Olin's Revised Cleanup FS Report provided groundwater data that indicate other perchlorate source(s) may exist in groundwater north and northeast of the Site, Olin is still required to continue to investigate perchlorate concentrations detected immediately north and northeast of the Site and to establish whether the detected perchlorate is emanating from the Site.

7. *Finding No. 6: The statement, "This Order is being issued to require implementation and completion of all necessary investigation and remedial actions (hydraulic control and cleanup) associated with perchlorate plumes emanating from the Facility" is problematic. This clause should be amended to explicitly include perchlorate plumes to the north of the Site, or at the very least, qualified to include plumes emanating from the Facility "in any or all directions" so as not to exclude the northeast plume.*
8. *Finding No. 7 should be revised to make it clear that it applies to all areas "in all directions, including northeast", beyond the property boundary.*

STAFF RESPONSE:

Staff concurs and has revised Finding No. 7 as follows:

"This Order applies to the entire Facility and to all areas beyond the property boundary, **in all directions**, that have been impacted by perchlorate that originated from the Facility. Perchlorate from the Facility is present in underlying soil and groundwater and groundwater outside the Facility property boundaries."

9. *The Figure 2 reference to Olin's plume map should, at the very least, be amended to say that the area of impact **includes, but is not limited to** those areas shown in Figure 2.*

STAFF RESPONSE:

Staff has revised all references to any figures depicting groundwater plumes, as recommended.

10. *The Proposed CAO perpetuates the fiction that Olin may not be responsible for the Northeast Contamination Area notwithstanding the December 2006 CAO. Specifically, the Water Board must make it clear to Olin that **OLIN IS RESPONSIBLE** - period.*

STAFF RESPONSE:

Please refer to our specific Staff Response to Olin Corporation's comment No. 1, above.

11. *The City requires remediation of the Northeast Area by Olin now.*

STAFF RESPONSE:

See discussion in Staff Response to Olin Corporation's comment No. 1, and City of Morgan Hill's comment No. 2, above. Pursuant to Cleanup or Abatement Order No. R3-2006-0112, Olin is required to continue implementing a step-wise approach of characterizing the lateral and vertical extent and degree of groundwater degradation that originates from the Olin site. Based on the degree (perchlorate concentrations) of degradation determined to date, Olin's MA cleanup component must also apply to the area immediately east and northeast of the Olin Site within the deep aquifer zone (i.e., the areas of the Llagas Subbasin for which the Central Coast Water Board has determined Olin is the likely source of the perchlorate detections). Based on the results of the on-going characterization activities, Central Coast Water Board will evaluate the need for a more aggressive cleanup strategy in this area (e.g., pump and treat).

12. The proposed CAO contains many vague terms and phrases which must be clarified so that Olin, and the public, clearly understand what is expected. It should include a specific timeline for performance so that Olin can be held to task without dispute (which would lead to even more delays) if it fails to comply with the Proposed CAO.

STAFF RESPONSE:

Staff has revised the proposed CAO to improve clarity and ensure that all interested parties (stakeholders) clearly understand what is expected. The Proposed CAO is revised to include specific implementation tasks and dates so that Olin may be held to task without dispute. Water Board staff has incorporated implementation tasks and deadlines into the CAO, consistent with our forthcoming response letter concerning Olin's Llagas Subbasin Cleanup Work Plan.

13. Monitored Attenuation is unacceptable as the only remediation for the other areas of the Subbasin outside of Area I. The Proposed CAO fails to protect the integrity of the City's water supply, and the rest of the Subbasin, by allowing Olin to conduct piecemeal remediation and to allow monitored attenuation.

STAFF RESPONSE:

The approved cleanup strategy consists of a phased cleanup approach for perchlorate-impacted groundwater within the Llagas Subbasin. Implementation of the phased approach includes hydraulic containment and treatment of groundwater (i.e., pump and treat) in the area of highest concentrations (plume core) in combination with MA for those areas with lower perchlorate concentrations. Specifically, Olin is required to install dedicated groundwater extraction wells within the plume core (i.e., Priority Zone A) that exists within the intermediate and deep aquifer zones to achieve effectively hydraulic control of migration of perchlorate-impacted groundwater to downgradient areas, and achieve compliance with groundwater cleanup requirements. Olin will monitor and evaluate the results in those areas with lower perchlorate concentrations to determine the effectiveness of the hydraulic control measures and MA. Olin is required to evaluate the effectiveness of the phased cleanup approach to determine the need for additional active remediation in areas of lower perchlorate concentrations.

As you may know, Water Board staff conditionally approved MA as a remedy component of the approved groundwater cleanup strategy. Olin will implement MA

throughout the areas of the Llagas Subbasin with lower concentrations of perchlorate. Specifically, MA shall apply to all portions of the Llagas Subbasin outside of the plume core, including the area immediately east and northeast of the Olin Site.

Our approval of the MA remedy component continues to be conditional because our evaluation of the long-term effectiveness of MA and the predicted timeframes estimated for groundwater cleanup, as addressed in Olin's groundwater model, is not complete. Due to our concerns regarding the effectiveness of the MA remedy component, Olin is required to implement the MA remedy component in strict accordance with USEPA's guidance document⁸ concerning the use of MA at groundwater cleanup sites. As such, Olin is required to continuously evaluate and demonstrate that the selected cleanup approach (MA in conjunction with hydraulic control and treatment measures) will effectively achieve remediation objectives within a timeframe that is reasonable compared to that offered by other methods, such as pump and treat.

In accordance with USEPA guidance, Olin developed and is required to evaluate the effectiveness of the phased remediation approach by implementing an approved Performance Monitoring Program and a Remedial Contingency Plan. The Performance Monitoring Program is necessary to evaluate whether the MA remedy option is performing as expected and is capable of attaining the remediation objectives within the anticipated (reasonable) timeframes. The Remedial Contingency Plan consists of an approach that will function as a backup remedy in the event that the MA component fails to perform as anticipated. The Remedial Contingency Plan will call for modification of the approved groundwater remedy, if needed.

Considering that MA is most appropriate and effective where it will be used in conjunction with other remediation measures (e.g., source control, groundwater extraction), Water Board staff are optimistic that the implementation of Plume Containment System (hydraulic containment and treatment) within the plume core of Assessment Area I should accelerate cleanup in downgradient areas so that groundwater extraction would be unnecessary for Areas II, III, and IV.

Further, since Olin will use modeling results as a guide to initiate the required groundwater remediation activities, Central Coast Water Board staff has contracted an independent, third-party consultant (California Department of Toxic Substances Control) to review and evaluate the numerical groundwater flow and mass transport model that is used to simulate the perchlorate distribution, predict the decreases in perchlorate concentrations over time, remediation time frames, and evaluate the need for additional characterization activities within certain areas of the Subbasin, particularly in the deep aquifer zone. Independent of the modeling results, Olin is required to base all final decisions concerning the appropriate remediation strategy, groundwater extraction rates, capture zones, and cleanup times on confirmatory field data that Olin will collect as it implements the approved groundwater remedy.

⁸ United States Environmental Protection Agency, OSWER Directive Initiation Request, "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites," April 21, 1999.

Water Board staff refers you to our response to Water District's comment No. 5 regarding the integrity of the Llagas Subbasin water supply and the City of Gilroy comments regarding the MA remedy.

14. The problem with extensions and violations are not addressed in the Proposed CAO

STAFF RESPONSE:

Staff will include the following statement as part of the implementation section D of the proposed CAO: "If, for any reason, the Discharger is unable to perform any activity or can not submit any document in compliance with the schedules in this Order or in compliance with any requirement of this Order, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay and shall be received at least 60-days prior to the scheduled deadline, or as soon as a delay is confirmed, which ever comes first. The Executive Officer may grant the request by revision of this Order or by a letter."

15. Once cleanup begins, there should be regular status reports and effectiveness evaluation at least once a year, if not more.

STAFF RESPONSE:

Staff concurs with this recommendation and amended the Ordering part of the proposed CAO to require yearly remediation progress updates concerning the effectiveness of the selected remedial alternative(s). Water Board staff also refers the City to Olin's discussion of their plans for annual reporting in the Cleanup Workplan.

16. The city of Morgan Hill requests that the Central Coast Water Board issue a Cleanup and Abatement Order requiring Olin Corporation to provide wellhead treatment as replacement water at the City's Tennant Well. The City makes this request pursuant to Water Code Section 13304(a). The City requests that this item be placed on the agenda for the December 7, 2007 Water Board hearing.

STAFF RESPONSE:

Please refer to our Central Coast Water Board's June 29, 2007 response to the City's May 22, 2007 letter concerning the same issue, as paraphrased in Staff Response to the City's comment No. 1, above.

PERCHLORATE ADVISORY GROUP (PCAG)

1. Broad Based Comments - Entire Llagas Subbasin Remediation

- PCAG supports the stated active remediation of 'pump & treat' for Priority Zone A (areas with Perchlorate levels > 24.5 ppb).
- PCAG requests that the WB require Olin to re-evaluate at least some of the wells in Priority Zones B and C for 'pump & treat' remediation (i.e. especially wells with concentrations of 8 ppb to 24.5 ppb, with increasing concentrations, and/or those in clusters or further away from the currently planned 'pump & treat').

STAFF RESPONSE:

As explained in our forthcoming letter response to Olin's Cleanup Work Plan, the approved cleanup strategy consists of a phased cleanup approach for perchlorate-

impacted groundwater within the Llagas Subbasin. Implementation of the phased approach includes hydraulic containment and treatment of groundwater (i.e., pump and treat) in the area of highest concentrations (plume core) in combination with MA for those areas with lower perchlorate concentrations. Olin is required to evaluate the effectiveness of the phased cleanup approach to determine the need for additional active remediation in areas of lower perchlorate concentrations. A key feature of the approved cleanup strategy is the development and implementation of a performance monitoring program and remedial contingency plan for the areas of the plume remediated by monitored attenuation. The remedy components are designed to gauge the efficacy of the cleanup strategy. Based on ongoing evaluations, Water Board staff will determine the need for modifying the cleanup strategy including the need for additional extraction wells. The proposed Order requires, "The Discharger shall install ion exchange (IX) systems on all domestic water supply wells that are actively used as a potable source and with perchlorate concentrations greater than 8.0 µg/L. The Discharger is required to operate and maintain the IX systems and provide an alternative water supply until compliance with State Board Order No. WQ 2005-0007 is achieved."

Please refer to the last paragraph of our Staff Response to the Water District's comment No. 3.

2. *PCAG **does not** support Monitored Attenuation (MA) as the only remediation for the rest of the Perchlorate contamination (≤ 24.5 ppb) in the Llagas Subbasin. MA does not provide the level of protection that our communities deserve.*
 - *Olin's conclusion that 'decreasing the cleanup time by several years' is not significant, means that Olin does not recognize the burden being placed on our communities.*
 - *For residents in the unincorporated area, the bottles of water are a constant reminder that their tap water is not safe. Also, many of these folks have the additional burden of not being able to lift the bottles and of having to rely on neighbors for help -- and --*
 - *MA obviously has not worked over the years for the well concentrations that have increased recently. Plus, many of those wells are in clusters a significant distance from the 'pump & treat' system that is being planned for Priority Zone A.*
 - *Morgan Hill residents have been and will continue to pay a 15% surcharge on water in order to offset the cities costs of providing safe alternative water.*
 - *PCAG submits that MA is **not** an effective 'stand alone' alternative **IF** the quality of people's lives is valued and thereby the amount of time before cleanup is important.*
 - *PCAG strongly encourages the WB to require Olin to immediately and thoroughly evaluate the benefits and feasibility of additional alternatives for active Perchlorate removal in the entire Llagas Subbasin.*
 - *In this regard, we encourage the WB to carefully re-consider points raised in the Water District's (WD) letter dated March 1, 2007.*

STAFF RESPONSE:

Water Board staff understands the communities stress and concern about the quality of the water coming out of their taps, and the frustration with lifting the bottles of water and the concern about the quality of the water they are drinking. We understand that the community is not only concerned about perchlorate but also nitrate concentrations that

exceed the MCL in numerous wells in the Llagas Subbasin. See response 13 to the City of Morgan Hill and response to PCAG comment No. 1.

Water Board staff is encouraged that the number of domestic wells with perchlorate concentrations greater than the MCL continue to decrease. Based on data from the Third Quarter 2007 groundwater monitoring report, 37 domestic supply wells currently exceed the MCL compared to 68 wells one year ago. Currently, Olin provides replacement water to all domestic well users with perchlorate concentrations above the maximum contaminant level (6 µg/L). Olin will continue to provide replacement water to water users relying on wells with perchlorate concentrations greater than 6.0 µg/L and will continue to monitor those wells that are no longer receiving bottled water, in accordance with State Water Board Order WQ 2005-0007 and our letter dated October 6, 2006, "SLIC: 425 Tennant Ave, Morgan Hill; Termination of Replacement Water and Post Monitoring Requirements." With the exception of two domestic supply wells with perchlorate concentrations of 19 µg/L and 9.6 µg/L, respectively, all domestic supply wells with perchlorate concentrations greater than 8.0 µg/L are fitted with ion exchange systems (the two exception wells are not currently being used so Olin has not provided well head treatment).

3. Referencing Documents

- *PCAG suggests that while it is useful to have lists of documents where more information can be found, this information is better utilized if presented in a 'Reference Section' at the end of the CAO.*
- *PCAG submits that **all** actual requirements and agreements should be clearly and completely stated in the CAO. Writing these out promotes understanding, analysis, adherence to and monitoring of all aspects of the CAO for all parties involved.*
- *PCAG appreciates the Water Board's continued interest in hearing from the community. At the same time, it is very difficult even for committee members and certainly the general public to provide educated comments when they do not have sufficient information easily accessible to them. Having **all** actual expectations and agreements clearly and completely written out in the CAO, would be very helpful to everyone.*

STAFF RESPONSE:

Comment noted. Please refer to our response to City of Morgan Hill comment #12. Water Board staff has revised the proposed CAO to improve clarity and specify cleanup requirements, expectations, and key implementation deadlines.

4. Establishing Background

- *PCAG supports the WB's statements that they will continue to find that the background Perchlorate level in groundwater is less than the Method Detection Limit (MDL) of typically 1.4ppb.*
- *PCAG also understands & supports the Water Board's statements that background will be the MDL unless the WB concurs with both of the following: 1) The proof provided by Olin that the MDL goal is not reasonably attainable, and 2) The new cleanup level proposed by Olin is more technically and feasibly acceptable.*
- *However, PCAG respectfully submits that while this may need to be stated 'one time' in the CAO, it does not need to be stated again & again. In our view, restating could send*

the wrong message and therefore, all additional comments regarding background cleanup levels should refer to the MDL or below.

STAFF RESPONSE:

Comments noted and CAO revised to improve clarity.

5. Source Determinations

- *Olin has had at least 4 years to provide proof of any other source of this Perchlorate water contamination issue. Some of Olin's reports have pointed at a few other possibilities but NO PROOF has been submitted to our knowledge.*
- *As a result, PCAG submits that Olin is the source of the Perchlorate contamination for the entire Llagas Subbasin and the CAO should reflect that fact.*
- *PCAG suggests that the WB consider giving Olin a reasonable due date (perhaps June 2008) by which time proof must be submitted.*
- *PCAG submits that actions of the Santa Clara Valley Water District should not be relied upon for any aspect of this CAO including background and/or source determinations.*
- *However, we also request the WB encourage Olin to work out agreements with agencies, such as the District, that may help achieve timely remediation.*

STAFF RESPONSE:

Please refer to our Staff Response to Olin Comment #1, Water District Comment #4, and City of Morgan Hill's Comments Nos. 2 and 6 for specific responses concerning other potential sources of perchlorate identified in areas north and northeast of the Olin Site. Please note that Olin can provide information that may redefine background concentrations at any time and we will have to consider it. It is in Olin's interest to provide that information sooner, because without any credible contrary information, cleanup will be to background = MDL.

6. Reminders – new Maximum Contamination Level (MCL)

- *All aspects of the CAO that mention the MCL need to be updated to the new regulatory standard of 6 ppb.*
- *Also, all aspects of the CAO that refer to the Public Health Goal (PHG) needs to be changed to MCL.*
- *Background (MDL) should be the cleanup goal – not the health goals/standards.*

STAFF RESPONSE:

Comment noted and PHG has been changed in appropriate sections.

7. CAO for Olin (not agencies)

- *PCAG submits that Agency actions (such as Santa Clara Valley Water District and City governments) should not be referenced as part of the cleanup agreements and expectations in this CAO.*
- *It is Olin's responsibility to*
 - *Accept background as the MDL unless and until 'they' can prove otherwise.*
 - *Move forward with analysis and implementation of cleanup alternatives without depending on Santa Clara Valley Water District's recharge program, Treated Groundwater Recharge/Re-injection agreements, Forensic Chemistry Study ...*

- PCAG does ask the WB to encourage Olin to immediately start working toward collaborative agreements with agencies such as the Water District to develop programs that accelerate the effectiveness of remediation strategies.
- While PCAG encourages agencies to work collaboratively and expeditiously to facilitate removal of Perchlorate from the plume, Olin needs to responsibly move forward without waiting or depending on the activities of other agencies.

STAFF RESPONSE:

Comment Noted. See response to District on this issue.

8. Draft CAO In-Line Comments - Introduction Pages 1 – 17:

Item # 6 states that the CAO includes a cleanup schedule for all remediation actions.

- PCAG asks → Where is the cleanup schedule in the CAO?
- PCAG submits that when the schedule is added to the CAO, it should have specific dates for achieving milestones, not just the generic numbers for each month.

STAFF RESPONSE:

Water Board staff has revised the proposed CAO to include a specific timelines for key cleanup milestones.

9. Item # 8 states that the California Department of Public Health (CDPH) defined the health effects.

- PCAG believes the health effects were defined by the Office of Environmental Health Hazards Assessment (OEHHA).
- Thereby, PCAG suggests that the second paragraph in #9 (Page 3) is more accurately placed in # 8.

STAFF RESPONSE:

Water Board has changed the items as recommended.

10. Item # 9 needs to be revised due to now having a regulatory standard (MCL)

- PCAG suggest that it is no longer necessary to provide the background information concerning establishment of the MCL nor why the Water Board has been referencing the PHG for level determinations.
- The WB's second paragraph better fits in item #8 as stated above.

STAFF RESPONSE:

Water Board staff revised items No. 8 and 9 as requested.

11. Item # 16 – Background Level

- See Broad Based Comments 3 & 6 above

Suggested New Wording: (From #16) → “The Discharger has not yet determined...quality that is reasonable.” (added from WB #17) → “Until the Discharger substantiates its assertion that.... the Central Coast Water Board will continue to find that the background Perchlorate level in groundwater...is less than the method detection limit (MDL).”
PCAG submits that the rest of the text for #16 probably is not necessary.

STAFF RESPONSE:

Staff agrees with the suggested revision. Please refer to Finding No.44 of the proposed Order, which states:

“44. Background Level: Until the Discharger substantiates its assertion that a measurable background level of perchlorate exists within the entire Llagas Subbasin or discrete areas within the Subbasin, the Central Coast Water Board will continue to find that the background perchlorate level in groundwater (for the majority of the Llagas Subbasin) is less than the method detection limit (MDL⁹).” In accordance with State Board Resolution No. 92-49, the background concentration of perchlorate in groundwater within the Llagas Subbasin must be the level of perchlorate that would exist in groundwater without regard to any discharges from the Facility.¹⁰

12. Item # 17 – Other Sources

➤ See Broad Based Comments 4 above

Suggested New Wording: “The Discharger has not demonstrated....within the Subbasin. Until the Discharger substantiates its assertion that **other sources do exist**, the Central Coast Water Board will continue to find that the **source is Olin.**”
PCAG moved the rest of the text that was here to # 16 above.

STAFF RESPONSE:

Staff agrees and modified the finding. Please refer to Finding No. 45 of the proposed Order, which states:

“45. Other Potential Sources: On February 10, 2005, the Discharger and the Central Coast Water Board stipulated a stay of 13267 Order [December 8, 2004] requiring the Discharger to conduct an investigation of area northeast of Facility. Item No. 4 of the Stay states, “*The Santa Clara Valley Water District (“District”) has indicated that it is willing to commence a forensics investigation to the northeast of the Site. The primary focus of the District’s investigation will be outside of the area in which the area requires the Dischargers to conduct their forensics investigation (the “Forensics Area”). However, the District has indicated that it will also perform some of this investigation within the Forensics Area.*” The Santa Clara Valley Water District (Water District) is implementing a “Work Plan for the Perchlorate Source and Background Study of the Llagas Groundwater Subbasin” (June 2005) that will utilize forensic chemistry to determine, if and to what extent, suspected natural and anthropogenic sources of perchlorate are contributing to the existing perchlorate groundwater impacts. While the Water District’s forensic investigation may not provide definitive results, we trust it will provide additional data that are likely to be relevant to any further proceedings related to the source(s) of perchlorate northeast of the Site. Presently, Water District staff anticipates that preliminary results will be available for review in the spring 2008.”

13. Item # 18 – Cleanup Level

⁹ The MDL is instrument-specific and is defined as the lowest concentration that a given instrument can record. The MDL for perchlorate using United States Environmental Protection Agency (USEPA) Method 314.0 is typically 1.4 micrograms per liter (µg/L).

¹⁰ In the case of commingled plumes from multiple identifiable dischargers, background is determined without regard to the commingled discharges.

- See Broad Based Comments 3, & 6
- Also, PCAG submits that the MDL should be the accepted background level and thereby the cleanup goal and further discussion of changing that goal does not need to be continually addressed.

STAFF RESPONSE:

As addressed in Findings No. 44 – 48 of the proposed CAO, at this time Olin is required to proceed with immediate implementation of groundwater cleanup with the cleanup objective (goal) of achieving the background concentration¹¹ within each individual aquifer zone and those portions of the Llagas Subbasin impacted by discharges from the Facility. In accordance with State Board Resolution No. 92-49, the background concentration of perchlorate in groundwater within the Llagas Subbasin must be the level of perchlorate that would exist in groundwater without regard to any discharges from the Facility.¹² However, considering that Olin asserts that other sources of perchlorate are contributing to the detected concentrations, as groundwater cleanup proceeds, we must allow Olin to reevaluate the feasibility of achieving cleanup to background concentrations or reevaluate the feasibility of achieving an alternative groundwater cleanup level. Should Olin submit information that indicates background water quality cannot be reasonably restored, then Central Coast Water Board staff will review that information to ensure consistency with State Board Resolution No. 92-49, Section III.F.1. Nonetheless, until Olin substantiates its assertion that a measurable background level of perchlorate exists within the entire Llagas Subbasin or discrete areas within the Subbasin, we will continue to find that the background perchlorate level in groundwater (for the majority of the Llagas Subbasin) is less than the method detection limit (MDL¹³).

14. Item # 19 – Priority Zone A

- See Broad Based Comments 3

Suggested New Wording: PCAG suggest that the first & second sentences remain but consider deleting the rest. i.e. "This Order.....expeditiously. The Discharger.....by discharges from the Facility." These sentences would remain but the rest probably can be deleted.

STAFF RESPONSE:

As addressed in our previous response, State Board Resolution No. 92-49 allows Olin to reevaluate the feasibility of achieving background concentrations as the groundwater cleanup progresses or as other data becomes available that other sources of perchlorate are contributing the Llagas Subbasin. Water Board staff does not recommend changes to the proposed Order as a result of this comment.

15. Item # 23f – Northeast Flow

¹¹ If the implemented cleanup technology proves unsuccessful in achieving background in a technically and economically feasible manner, the Central Coast Water Board may adjust cleanup goals later.

¹² In the case of commingled plumes from multiple identifiable dischargers, background is determined without regard to the commingled discharges.

¹³ The MDL is instrument-specific and is defined as the lowest concentration that a given instrument can record. The MDL for perchlorate using United States Environmental Protection Agency (USEPA) Method 314.0 is typically 1.4 micrograms per liter (µg/L).

- *PCAG does not understand the purpose of continuing to discuss Source, Background or Northeast Flow.*
 - *PCAG submits that the Source is Olin, Background is MDL and Olin is responsible for the entire Perchlorate contamination of Llagas Subbasin (including the area northeast of the site) – and -- Olin knows they must provide proof, which is acceptable to the WB Executive Officer, if their responsibilities are to be changed.*

STAFF RESPONSE:

Finding No. 8(f) is intended to present the facts concerning outstanding Central Coast Water Board requirements for the area northeast of the Olin Site. Please see our Staff Response to Olin Corporation’s Comment No. 1, above.

16. Item # 41 – Monitoring

- *For consistency and greater understanding, PCAG suggest that all Areas I – IV and all Priority Zones A – C be addressed in each of the WB’s Shallow, Intermediate and Deep Aquifer comments.*
- *PCAG suggest that Priority Zone figures be attached to the CAO for all three aquifers.*
- *PCAG submits that it needs to be stated in the CAO that **cleanup is required** for all Perchlorate contaminated groundwater.*

STAFF RESPONSE:

Water Board Staff revised the proposed CAO to properly define each Assessment Areas I – IV, and Priority Zones A – C within the shallow, intermediate and deep aquifer zone. The Assessment Areas are currently identified in Figure 2 of the Proposed CAO. Staff revised Figure 3 and added Figures 4 and 5 in the proposed CAO to depict the Priority Zones within each of the affected aquifers. Further, Water Board staff revised the CAO to specifically state that “**Cleanup is required**” for all perchlorate polluted groundwater that was caused by Olin.

17. Item # 44 – Offsite Cleanup

- *See Broad Based Comments 1 & 2 & 3*

Suggested New Wording: “On March, 29, 2007, the and monitored attenuation in the Perchlorate concentrations **of \leq 24.5 ppb while additional remediation alternatives are being reviewed and considered for the MA areas.** The terms of the required cleanup activities are outlined in this Order. **Additional information can be obtained from the documents listed in the References Section of the CAO.**”
The rest would probably not be needed – however, cleanup activities need to be in the CAO as stated.

STAFF RESPONSE:

Staff has modified Finding No. 29 to ensure that the approved groundwater cleanup remedy is clearly stated and that unnecessary language was deleted.

- 18. *PCAG submits that **all actual expectations, agreements and tasks** should be clearly and completely stated & defined in the CAO.*

- *Due dates and consequences need to be clearly and completely stated & defined in the CAO.*
- *The WB needs to commit to prompt, reasonable enforcement.*

STAFF RESPONSE:

Water Board staff revised the proposed CAO to provide clear definition of all expectations, agreements, tasks and due dates. Be assured the WB is committed to prompt, reasonable enforcement.

19. *PCAG submits that Olin must provide clear and complete analysis and justifications for selection of MA as **the** remediation alternative for ≤ 24.5 ppb Perchlorate contaminated zones [i.e. Supporting evidence for MA must have graphs with numbers on the axes that clearly shows the year on one axis and the ppb level (graph goes down to MDL) on the other; and explanations must demonstrate cleanup timeframe expectations, frequency of and techniques for analysis of findings and actions planned if problems arise. A variety of analysis techniques need to present a very clear picture of findings and results.]*

➤ *Also, the WB states "The terms of the required cleanup activities are outlined in this Order."*

PCAG asks the following questions:

- *WHERE are the terms of the required cleanup activities outlined in the CAO?*
 - *Where are the WB's analysis, justifications and agreements regarding agreeing to the selection of MA **as the only** remediation alternative for contaminations ≤ 24.5 ppb?*
 - *What priority zones does the MA cover?*
- *PCAG agrees with the WB that the cleanup goal for MA areas is still background (MDL). **PCAG submits/asks** the following:*
- *What is the timeframe expectation for meeting this goal?*
 - *What are the identified alternative measures that can be implemented if MA is not enough to reach the goal of background in a desirable timeframe?*
- *The Areas/Zones involved, analysis techniques planned, anticipated cleanup completion timeframe estimate... need to be presented in the CAO.*
- *Details of Contingency Plans for both the Priority Zone A and the MA remediation alternatives need to be thoroughly presented in the CAO. PCAG submits that the Plan needs to provide answers such as the following:*
- *What progress or lack thereof, triggers implementation of the Contingency Plan with appropriate measures to speed up the cleanup?*
 - *What are the review dates, benchmarks and methods to be used for analysis of progress?*
 - *What decisions, measures and alternatives have been identified, need to be studied and/or implemented if the selected strategy is not reaching the goal in a reasonable timeframe?*
 - *The WB needs to state that they will require Olin to re-evaluate the cleanup strategy for all areas where/when problems appear?*
 - *PCAG expects the WB to require Olin to continue pumping and all other cleanup strategies throughout the plume if problems appear and new strategies need consideration and/or implementation.*

STAFF RESPONSE:

Water Board staff is currently preparing a detailed response to Olin's Cleanup Work Plan. Our Cleanup Work Plan response letter is very specific concerning the approved groundwater cleanup remedy including the MA remedy and details the conditions under which the MA remedy is approved. Our Cleanup Work Plan response letter also provides details concerning the proposed remedial contingency plan and performance monitoring program that are required elements of the MA. Additionally, please refer to our staff responses to Water District Comment #3, City of Gilroy Comment #1, City of Morgan Hill Comment #13, and PCAG Comments #1 and 2, above.

20. Item # 46 – Report References

- See Broad Based Comment 2

*Suggested New Wording: "Reports **that** detail the presence of Perchlorate in soil **and/or** groundwater at, and beyond, the Facility **can be found in the Reference Section at the end of the CAO.**"*

The last paragraph, "Reports not specifically included...." could be added to the above statement.

STAFF RESPONSE:

Staff does not recommend adding a Reference Section at the end of the proposed CAO. The reports are already referenced in the "Findings" section of the proposed CAO.

21. IT IS HEREBY ORDERED pages 17 - 25

CAO Broad Comments:

- PCAG submits that this CAO needs to be specific about the targeted Perchlorate levels, where active groundwater cleanup will occur, the date of implementation and how long this strategy will continue.
 - Figure(s) that support those findings need to be attached to the CAO.
- PCAG submits that **all actual expectations, agreements and tasks** should be clearly and completely stated & defined (including due dates...) in the CAO.
- PCAG believes that while it is useful to have lists of documents where more information can be found, that list needs to be at the end of the CAO in the Reference section.
- Requirements and Agreements need to be written out in the CAO as this promotes understanding, analysis, adherence to and ease in monitoring of for all parties involved.
- PCAG submits that this CAO should include analysis and justification for MA being the selected cleanup alternative for the majority of the Perchlorate plume.

STAFF RESPONSE:

Staff has revised the proposed CAO to include implementation dates, and how long the cleanup will continue (i.e., until the Executive officer determine that groundwater cleanup is complete). Further, as discussed in prior responses, we have revised these sections to ensure that all expectations, agreements, tasks, and key implementation dates are incorporated into the proposed CAO.

22. CAO Part C – Implementation of Offsite Cleanup Work Plan

- PCAG asks for clarification of differences and intent of CAO Parts C & D.

- *COMMENT: All (or most) of the PCAG comments under Item # 44 above, most likely belong in this section of the CAO.*
- *PCAG contends that providing viable input on this section is very difficult at best. We do not know the WB's response to Olin's Report; we do not know of any agreements that have been made; and we do not know tasks due dates nor specifics of the identified tasks for this section.*
 - *PCAG requests that the WB provide the above information as soon as it is available and we will provide comment at that time.*
- *PCAG submits that active remediation should not be delayed just because additional information is needed, additional wells need to be installed or because the deep aquifer characterization is not complete.*
 - *PCAG submits that the WB should require Olin to implement the plan in accordance with the approved schedule with clear due dates. Implementation needs to start immediately and a separate schedule can be submitted for any additional work that needs to be done.*

STAFF RESPONSE:

Water Board staff revised this section to be consistent with the approved groundwater cleanup strategy for all Olin affected portions of the Llagas Subbasin, as clarified and conditioned in our upcoming Water Board's response letter concerning Olin's Llagas Subbasin Cleanup Work Plan. Water Board staff revised the proposed CAO to outline the key implementation schedule for the approved groundwater cleanup remedy.

23. PCAG believes this Suggested New Wording belongs in this section: "All investigation & implementation activities that must be completed as directed and as amended by the Executive Officer, and as discussed in Central Coast Water Board responses to several documents are addressed in this section and are as follows:"

STAFF RESPONSE:

Water Board staff has clarified the Ordering portion of the proposed Order to ensure that all requirements are implemented as directed and as amended by the Executive Office.

24. CAO Part D – Implementation of Area 1 Plume Migration Control

- *D 1– PCAG Question: Why is the Area 1 Plume migration Control Feasibility Study Addendum not due for 6 months? If it is because of the need for additional deep aquifer characterization, PCAG does not agree – the Addendum could be required several months sooner.*
 - *PCAG agrees with the WB that we need to move forward immediately with implementation of the long-term cleanup strategies.*
 - *Therefore, PCAG submits that the already approved deep zone extraction well must be implemented now even as characterization of the deep aquifer is being completed.*
 - *PCAG submits that ALL agreements currently in place regarding cleanup of both the intermediate and deep aquifers should begin NOW.*

STAFF RESPONSE:

Please see Staff response to Water District Comments #2 and #3. Additionally, our response to Olin's Cleanup Work Plan includes the following:

According to the updated schedule, the intermediate extraction well will be installed and tested by the end of November 2007, as originally indicated in Olin's April 30, 2007 Area I Well Installation Work Plan, and as approved by the Executive Officer. For the deep extraction well(s), Olin must complete additional characterization activities to determine the appropriate number and location(s) of deep aquifer-zone extraction wells that will be required to achieve Priority Zone A containment in the deep aquifer. Olin now anticipates it will not complete the necessary deep aquifer characterization work until December 2007. According to Olin's revised schedule, considering permitting, subcontracting & mobilization activities, well installation & development, and hydraulic testing, the earliest that data will be available to support the development of the FS Addendum is March 2008. To allow time to evaluate the deep aquifer data, Olin shall submit the FS Addendum by **April 15, 2008**.

During a July 25, 2007 meeting, Central Coast Water Board staff discussed with Olin and its consultants, the factors concerning the new findings related to the deep aquifer zone and the associated impact on the schedule for design, implementation, and startup of the Priority Zone A containment system. Based on these factors, Central Coast Water Board staff agrees that Olin's request for four additional months to optimize and properly design hydraulic containment in the deep aquifer is reasonable, appropriate, and acceptable. We agree that it is not possible to resolve the uncertainties described until characterization of the deep aquifer is complete and the deep aquifer extraction well(s) are located, installed, and tested. Only when the uncertainties are resolved will it be possible to complete and submit the FS Addendum. Hence, Central Coast Water Board staff concurs with Olin's request for an extension for submittal of the FS Addendum until **April 15, 2008**.

We are concerned with delaying the implementation of the groundwater plume containment system any longer than necessary. Therefore, irrespective of the results of the additional deep aquifer zone work, Olin is required to proceed with implementation of the intermediate aquifer system as previously scheduled. Olin must use the results of the ongoing deep aquifer-zone characterization activities to determine whether it must proceed with the implementation of a groundwater containment system for the intermediate aquifer zone independent of the deep aquifer zone. We understand that the FS Addendum will specifically address implementation options (i.e., proceed with current approach of a combined groundwater containment system for the intermediate and deep aquifer zones versus implementing independent groundwater containment systems for the intermediate and deep aquifer zones). In the interim, Olin is required to keep Central Coast Water Board staff apprised of progress as data becomes available from the deep aquifer characterization activities, and continue to provide updates in its monthly progress reports concerning the installation and testing of the intermediate aquifer zone extraction well.

Further, we expect Olin's FS Addendum will specifically address the scheduling, installation, and testing of an effective groundwater containment system for the deep aquifer zone. The proposed containment system shall include a sufficient number of

extraction wells to achieve plume core containment. Based on the recent sampling results, the plume core within the deep aquifer zone is extremely large and will likely require several extraction wells to achieve effective hydraulic control and remediation. Olin's evaluation must consider the recent sampling results from piezometer PZ-05 and well MW-53, directly east of the Site. Therefore, Olin's FS Addendum shall include a re-evaluation of the originally proposed location so that the proposed deep extraction well(s) will augment the reduction of perchlorate concentrations detected east of the Site (i.e., PZ-5). We believe this schedule will provide Olin sufficient time to evaluate its overall cleanup strategy, particularly in the downgradient portions of the plume core. Specifically, Olin must re-evaluate the location and capacity for a deep well in the presently proposed location (i.e., east of MW-16).

The FS Addendum shall also address Olin's selection of a treated water disposition option, an extraction well design, and the water treatment option that incorporates containment of the expanded deep aquifer plume volume".

25. D 2 – In the list of tasks for the 100% Design Package, a Contingency Plan Update is mentioned.

- *Where are the Contingency Plans for Priority Zone A and MA presented in this CAO?*

STAFF RESPONSE:

Olin's Cleanup Work Plan includes a proposed remedial contingency plan for Priority Zone A and MA. However, due to the lack of specificity and our concern with ensuring that the effectiveness and the proposed remedy is evaluated, staff has required Olin to provide additional details concerning the proposed contingency plan and to outline specific triggers that will define when the remedy is working and when to implement the contingency remedial alternative. Again, our response letter concerning Olin's Cleanup Work Plan outlines our concerns and request for additional information.

*26. D 3 – PCAG contends that **clear tasks due dates** for both **implementation** and **start up** need to be included. PCAG also contends that reasonable, clear consequences for not meeting due dates need to be spelled out.*

STAFF RESPONSE:

Comment noted and CAO clarified.

27. CAO Part E – References

- *See Broad Based Comment 2*

Suggested New Wording: **“All investigation & implementation activities must be completed as directed and as amended by the Executive Officer, and as discussed in Central Coast Water Board responses to several documents which are listed in the Reference Section of this CAO. The actual investigation & implementation activities are addressed in CAO Part C above.”**

STAFF RESPONSE:

Staff will incorporate some of the suggested language.

28. CAO Part F – Yearly Updates

- *PCAG supports yearly submittals to the 2006 Characterization Report **IF** this is **only** for On-Site soil and groundwater updates.*
- *PCAG submits that quarterly analysis of all other cleanup activities is necessary for at least 2-years after successful implementation. Yearly updates may be a useful reporting tool at each year's end.*

STAFF RESPONSE:

Part F requires yearly updates to Olin's 2006 Characterization Report. These Characterization Report yearly update requirements are intended to update the Water Board on all hydrogeologic aspects of the cleanup case. Updates will address groundwater monitoring activities, well installation, results of ongoing investigation activities, recommendations for additional work, etc. The Characterization Report also summarizes the most significant data presented in the quarterly groundwater monitoring reports and updates the Water Board on new hydrogeologic findings and presents recommendations for additional characterization activities that may be deemed necessary and appropriate. Staff has added a specific section to the Ordering part of the proposed Order to require yearly progress reports concerning the approved groundwater remedy.

Specifically, Ordering Part D.2 of the proposed Order requires, "The Remediation Contingency Plan shall include **yearly remediation progress updates** concerning the effectiveness of the approved phased groundwater cleanup. The yearly updates must summarize the results of all the evaluations performed to date and include recommendations for system modification and or continued operation." Also, quarterly monitoring reports will continue to include groundwater results and treatment system results.

29. CAO Part G – Five-Year Status Report and Effectiveness Evaluation

- *PCAG submits that it is **far too early** in the process to just expect status reports and effectiveness evaluations every five years.*
- *PCAG submits that after implementation (started up), the MA (≤ 24.5 ppb) and the Priority Zone A (>24.5 ppb) cleanup strategies, status reports and effectiveness evaluations need to be quarterly, with an additional summary at the end of the first year and cumulative summaries that address the progress for each succeeding year.

 - *After **two years of successful reports and evaluations**, updates every 5-years may be an appropriate consideration.**
- *PCAG submits that for ALL other areas in the Llagas Subbasin with Perchlorate contaminations that are ≤ 24.5 ppb, status reports and effectiveness evaluations need to be received on a quarterly basis.*
- *PCAG submits that quarterly review dates (benchmarks) promote analysis of progress and provide information for decisions about other measures that may need to be implemented.*

STAFF RESPONSE:

Staff has revised the CAO Part D (see our response to PCAG comment No. 29, above) to require annual effectiveness evaluations that address the progress of each succeeding year. Thereafter, updates and evaluation will be required on a yearly basis

with progress summaries every five years. Also, the Discharger is required to continue providing groundwater updates on a quarterly basis, as part of the Quarterly groundwater monitoring requirements.

30. CAO Part H – Completion of Groundwater Cleanup

- *PCAG recommends deleting everything except the first sentence. The WB has already appropriately addressed this issue and even has it addressed in the first sentence with the sub-script.*

STAFF RESPONSE:

Comment noted. Water Board staff revised Part H as recommended.

31. CAO Part I – Evaluation of New Health Criteria

- *PCAG is not clear why Items # 8 & # 9 (from above section) and Part I (this section) are included in this CAO.*
- *PCAG submits that we agree with the WB that the cleanup goal is the MDL. Cleanup is not based on health goals.*

STAFF RESPONSE:

Water Board staff removed Part I of the proposed CAO. Subsequent sections have been re-numbered. Findings Nos. 8 and 9 have been revised to ensure they are applicable.

32. CAO Part M – Amendment of Due Dates

- *PCAG realizes and appreciates that there may be times when due dates cannot be met and we support the WB statements in this section.*
- *However, PCAG also believes clear, reasonable consequences need to be stated and adhered to.*
- *PCAG also recommends that the WB add to their extension policy the date by which the request must be received. (For Example: If Olin had 3 months to complete a task, perhaps a request would have to be received by the WB in written, documented form one month prior to the due date.)*

STAFF RESPONSE:

Water Board staff has revised this section to include appropriate language concerning the enforcement actions that the Discharger would be subjected to in the event of non-compliance with stated requirements. Please refer to our response to the City of Morgan Hill comment #14, and Order Part L of the proposed Order.

33. CAO Part N – Oversight Costs

- *PCAG finds the Oversight Costs sections (Item # 49 and CAO Part N) to be **very clear**. It sends a definite message regarding due dates and consequences if not met.*
 - ***PCAG requests** that the WB make sure this CAO sends the same definite message regarding timely implementation of appropriate cleanup strategies for the Perchlorate contamination of our groundwater. Clear due dates, expectations and consequences will assist in this regard.*

STAFF RESPONSE:

Comments noted; we have attempted to clarify with the new draft CAO.

ASSEMBLY MEMBER JOHN LAIRD

1. *According to the Santa Clara Valley Water District, “the premise for monitored attenuation, i.e., that perchlorate concentrations are declining with time, has not been quantitatively demonstrated.” Accordingly, I encourage the Board to adopt the Water District’s October 29, 2007, recommendations to ensure a more effective and expeditious cleanup of the entire plume.*

STAFF RESPONSE:

Please refer to our staff response to the Water District Comment #3, above.

2. *I am also concerned that the actual cleanup could be delayed two or more years while Olin finalizes various arrangements. Regardless of whether residents rely on private wells or municipal water, they have a right to have the water returned to background as quickly as possible. Moreover, the expectations that well owners must rely on bottled water indefinitely is unreasonable. Therefore, I urge the Water Board to require Olin to commence interim remediation efforts. In addition, I concur with the Water District’s recommendation that after four additional years, Olin should be required to restore the full, unrestricted use of well water to the properties impacted by perchlorate above 6 ppb by installing wellhead treatment systems. This requirement should be applied to public water supply systems.*

STAFF RESPONSE:

Please refer to our staff response to the Water District Comment #3, City of Gilroy Comment No. 1, City of Morgan Hill Comment No. 13, PCAG Comments Nos. 1, 2, 19, and 24, above.

3. *It is also my understanding Olin has developed detailed contingency plans that include timetables, benchmarks, triggers, review dates, methods of analysis and remediation alternatives in the event progress is not being made. I can foresee a situation where progress is lacking and cleanup is delayed further while Olin revisits its strategy. In this regard, I support the Perchlorate Citizens Advisory Group’s recommendations that contingency plans be thoroughly presented in the CAO. Furthermore, the CAO should also be amended to include all actual requirements and agreements, and information on the consequences of failing to fulfill these should be provided as well*

STAFF RESPONSE:

Please refer to staff response to PCAG Comment No. 19.

MR. RICHARD M. PEEKEMA

1. *The Central Coast Water Board must find that it is safe to drink water containing 6 ppb perchlorate, because the California Department of Public Health (DPH) has set that amount as the maximum Contaminant Level (MCL).*

STAFF RESPONSE:

For clarification purposes, we have included a definition of the term “maximum contaminant level” in the CAO. Also, please note that the Central Coast Water Board is not the responsible agency for determining whether water is safe to drink. It is the Central Coast Water Board’s responsibility to protect groundwater as a resource and

prevent water quality degradation. As such, the Central Coast Water Board is requiring Olin to restore concentration of perchlorate in groundwater to those concentrations that would exist in groundwater prior to any discharges from the former Olin site occurred. Water Board staff requires cleanup in accordance with State Water Board Resolution No. 92-49, which requires that all cleanup or abatement actions conform to the provisions of State Water Board Resolution No. 68-16 (Anti-Degradation Policy) and to applicable provisions of Title 27 or Title 23, Chapter 15, California Code of Regulations.

2. *Authority to regulate the entire Llagas aquifer no longer exists, because:*

- *Authority was based on perceived health threats from perchlorate in the aquifer waters. There are now no health threats from sub-MCL aquifer water.*
- *Authority was incorrectly based on Rule 68-12, when the Water Board failed to consider the degree of perchlorate threat as required by 23 CCR, Section 2907.IV.*

The Water Board should find that cleanup of the entire aquifer is not now authorized and is neither necessary nor feasible.

- *Even if authorized, such a cleanup is not necessary because concentrations above background but below 6 ppb pose no water quality threat.*
- *Even if necessary, such cleanup is not feasible because calculations show that the Llagas aquifer could not be restored to background at any reasonable cost.*

The Water Board should find that "cleanup to background" under Rule 92-49 is inappropriate for the Llagas aquifer.

The Water Board should find that in aquifer regions below the MCL, monitoring attenuation is adequate.

STAFF RESPONSE:

The Central Coast Water Board's Basin Plan designates groundwater beneath and adjacent to the Olin facility as suitable for agricultural water supply, municipal and domestic water supply, and industrial use. While we understand the detected perchlorate concentrations at many well locations are presently below the MCL, the mere presence of perchlorate in underlying groundwater indicates that the quality of groundwater has been degraded. By allowing the migration of perchlorate to offsite irrigation, municipal or domestic water supply wells, Olin is responsible for an ongoing waste discharge to waters of the state. Water Code section 13304 requires any person who has caused or permitted a condition of pollution or nuisance to clean up the waste or abate the effects of the waste. Olin does not have the right to pollute (impact existing beneficial uses) state waters. Therefore, in accordance with section 13304 of the Water Code, the Water Board can require Olin to clean up and abate the effects of its discharge.

Further, as addressed by existing cleanup order (Cleanup Order No. R3-2005-0014) investigation and cleanup of groundwater impacts associated with the Olin facility must be consistent with State Board Resolution No. 92-49. Specifically, State Board Resolution No. 92-49 (Section III.F) requires that all actions for cleanup and abatement conform to the provisions of State Board Resolution No. 68-16 (Anti-Degradation Policy) and to applicable provisions of Title 27, California Code of Regulations.

In accordance with State Board Resolution No. 92-49 (Section III.G), cleanup shall be conducted in a manner that promotes attainment of background water quality. If background levels of water quality cannot be restored, water quality must be restored to the best water quality, which is reasonable, considering all demands being made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. Any alternative cleanup level less stringent than background shall:

- Be consistent with maximum benefit to the people of the state;
- Not unreasonably affect present and anticipated beneficial use of such waters; and
- Not result in water quality less than that prescribed in the Water Quality Control Plans (Basin Plans) and Policies adopted by the State and Water Boards.

The underlying principle to remember is that it is the Water Board's mission to protect groundwater as a resource. It is the Water Board's responsibility to prevent degradation of water and if that is not technologically or economically feasible, then, at a minimum, Olin must preserve the water quality to protect actual and potential beneficial uses of the water. According to State Board Resolution No. 92-49, alternative cleanup levels may not be more permissive than the most stringent level that is technologically and economically feasible. Further, an alternative cleanup level may not be higher than the maximum concentration that would be allowed under other applicable statutes and regulations. Therefore, an alternative groundwater cleanup level may not, under any circumstances, exceed the level needed to protect the beneficial uses designated in our Basin Plan (e.g., MCL).

Water Board staff believes it is premature to know whether it will be technically and economically feasible to clean up perchlorate impacted groundwater in a reasonable time within each individual aquifer zone to levels below the MCL. As additional data are collected and evaluated, including data associated with the Water District's forensic chemistry study (for background determination purposes) and ongoing performance monitoring data, and as the Water Board staff thoroughly evaluate the efficacy of the selected remediation strategy, the appropriateness of being able to achieving background concentrations will be reevaluated. However, for now, the goal is cleanup to background concentrations.

PERCHLORATE WORKING GROUP

The draft Cleanup and Abatement Order, and the Olin strategy upon which it is based, does not achieve the goal of a time-certain, comprehensive cleanup plan for restoring the Llagas Groundwater Subbasin. We urge you and your Board to require Olin to immediately begin active cleanup in all aquifer zones now, ensure Olin's cleanup actions protect and promptly restore groundwater throughout the affected area, and aggressively use your authority to hold Olin accountable for meeting the community's needs and complying with State law and policy.

Active cleanup must begin now. Regional Board staff began regulatory oversight of this case in 2002 and the degree of off-site contamination was determined in early 2003. Nonetheless to date, not a single off-site well has been installed or operated to control migration of the plume or

to begin active off-site groundwater cleanup. Olin has several options for implementing immediate groundwater cleanup, including making use of the City of Morgan Hill's Tennant Avenue well and implementing their own Regional Board –approved Plume Migration Control Work Plan. The Regional Board must hold Olin accountable for implementing immediate cleanup in all affected areas. There is no reason to delay cleanup while further studies are being completed.

The Regional Board must act on its duty to protect and restore the community's sole source of drinking water supply by requiring Olin's cleanup actions to be protective and effective. Olin's proposed cleanup approach does not respect State policy requiring cleanup to background conditions, is based on incomplete analysis of the costs and benefits of only a few cleanup approaches, and, most importantly, does not recognize the burden and hardship Olin's contamination has put on the community. People should not have to use bottled water and try to juggle 5-gallon bottles around indefinitely because of Olin's discharge. Likewise, people should not have to pay 15 percent extra on their water bill to respond to Olin's discharge. Olin concludes that, "eventually", the proposed approach of minimal offsite pump and treat cleanup combined with existing groundwater operations will result in reduce perchlorate concentrations to acceptable levels. But, "eventually" is not soon enough. Olin needs to do everything feasible to restore the community's drinking water supply to background conditions immediately.

The Regional Board, at the Board level as well as at the staff level, must hold Olin accountable for meeting the community's needs to cleanup and water supply restoration and complying with the State laws and policies. Specifically, the Board needs to compel Olin to:

- *Immediately implement offsite groundwater cleanup, in all affected aquifer zones,*
- *Complete a cleanup feasibility study that quantitatively evaluates the costs and benefits of all reasonable alternatives for achieving background conditions in the Llagas Groundwater Subbasin, and*
- *Clean up all areas, including then northeast area, with concentrations above background concentrations, consistent with State policy.*

STAFF RESPONSE:

Please refer to our staff responses to Water District's comments #1 and #3, City of Gilroy comment #1, City of Morgan Hill comments #1, #2, #6, #11, and #13, and PCAG comments #1, #1, and #13.

Water Board staff concurs with the Perchlorate Working Group, which consists of City of Gilroy, City of Morgan Hill, Santa Clara County, and Santa Clara Valley Water District, that cleanup of offsite groundwater is required as soon as possible. The Perchlorate Working Group indicates that no active groundwater cleanup has occurred offsite to date. Water Board staff would like to point out that cleanup of perchlorate has occurred offsite at fifteen wells that are currently fitted with ion exchange systems. For example, the West San Martin Water Works and San Martin County Water District community supply wells that serve water to numerous west San Martin households have been fitted with ion exchanges systems since April 2004. Additionally, even though Olin has not installed offsite extraction wells to date to hydraulically contain the plume core, the successful onsite soil remediation and the operation of the onsite hydraulic containment system has prevented additional perchlorate concentrations from discharging into offsite groundwater.

Water Board staff concurs that people in Morgan Hill should not have to pay 15 percent extra on their water bill to respond to Olin's discharge. We applaud the City of Morgan Hill for fitting the Nordstrom Well and the Tennant Avenue Well with ion exchange systems to ensure that Morgan Hill residents are not consuming perchlorate concentrations. However, the City of Morgan Hill is not required to treat perchlorate concentrations below the MCL in accordance with the requirements of the Department of Public Health. Therefore, considering that the Nordstrom Avenue Well does not have perchlorate concentrations above the MCL and the San Pedro Well (which is the replacement well for the Tennant Avenue Well) does not have perchlorate concentrations above the MCL, the City of Morgan Hill has chosen to operate the ion exchange systems on their own accord. Additionally, the City of Morgan Hill reports nitrate concentrations that are detectable but below the MCL in water samples collected from the City's municipal supply wells (that is, relatively similar to perchlorate concentrations), however, we understand that the supply wells have not been fitted with ion exchange systems to remove nitrate.

ANDREA VENTURA

Ms. Ventura suggested that the Water Board consider revising the proposed Order so that it is clear that cleanup requirements may change as new information comes to light. Ms. Ventura suggested using adaptive implementation language that is used in development of TMDLs and provided several examples.

STAFF RESPONSE:

Comment noted. Staff did not utilize the proposed language since it was specific for the TMDL program, but we did modify language in the proposed Order to ensure that the wording is clear that cleanup requirements may change as new information comes to light.

ADDITIONAL CENTRAL COAST WATER BOARD STAFF OVERARCHING RESPONSE:

Central Coast Water Board clarified the proposed Order by adding heading and re-ordering most Findings. Additionally, staff clarified the Ordering portion of the proposed Order by including specific details concerning the approved cleanup approach and including a specific cleanup implementation schedule.

As evidence in the above public comments, the overwhelming concern of the majority of comments from most stake-holders, particularly the affected well-owners (represented by PCAG), is the expediency in which groundwater cleanup activities will be implemented and the uncertainties concerning the length of time that Olin estimates it will require to achieve water quality objectives for the affected portion of the Llagas Subbasin. More importantly, affected well-owners are dissatisfied with the extended time (Olin estimates at least 12 years to achieve the MCL within the intermediate zone) their water supply will remain impaired.

Based on these concerns, we believe it is absolutely necessary and appropriate to be conservative in our groundwater cleanup requirements, particularly for those areas where a public drinking water supply is affected, threatened and will remain at risk for an extended period of time. From a technical perspective, we fully understand the basis for the proposed groundwater cleanup strategy and approve of it for those portions (Aquifer zones) of the Llagas Subbasin that are not presently being used as a primary source of drinking water.

Therefore, Central Coast Water Board staff has revised the proposed cleanup order to require Olin to implement aggressive and prompt groundwater cleanup (hydraulic containment and remediation) not only within Priority Zone A, but also within Priority Zone B in the intermediate aquifer. We believe this requirement will not require any significant delays with the overall implementation schedule as the containment system has yet to be designed and constructed. By targeting Priority Zone B (i.e., extending the capture zone of the proposed groundwater extraction wells), cleanup time-frames will be accelerated and will result in the effective cleanup of the affected domestic supply wells much sooner than with the present approach.

Due to the timing with respect to finalizing this item and posting it on our website and mailing deadlines, we intend to revise all references to the term, “Plume Core” so that it is clear that our CAO’s requirement for active containment of the plume core shall extend to those areas in Priority Zone B within the intermediate aquifer only.

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